NEW JERSEY STATE HIGHWAY DEPARTMENT

TRAFFIC REPORT ON BEFORE AND AFTER IMPROVEMENT AT INTERSECTION OF ROUTES 1 & 25 (COMMUNIPAW AVE.) JERSEY CITY HUDSON CO.

COMPILED BY
W. R. BELLIS, CHIEF,
BUREAU OF TRAFFIC & SAFETY RESEARCH
WITH THE COOPERATION OF
THE BUREAU OF PUBLIC ROADS,
UNITED STATES DEPARTMENT OF COMMERCE

RANSFORD J. ABBOTT
STATE HIGHWAY COMMISSIONER

E. W. KILPATRICK
STATE HIGHWAY ENGINEER

O. H. FRITZSCHE, DIRECTOR,
DIVISION OF PLANNING, TRAFFIC & ECONOMICS

NJ
TE
176
T7
1950
C.1

DECEMBER 13 1950

SYNOPSIS

An extremely severe traffic congestion problem at a right angle intersection was solved by a relatively inexpensive re-design. It is believed that this type of design has not been employed before, A suitable descriptive term might be "Directional Channelization".

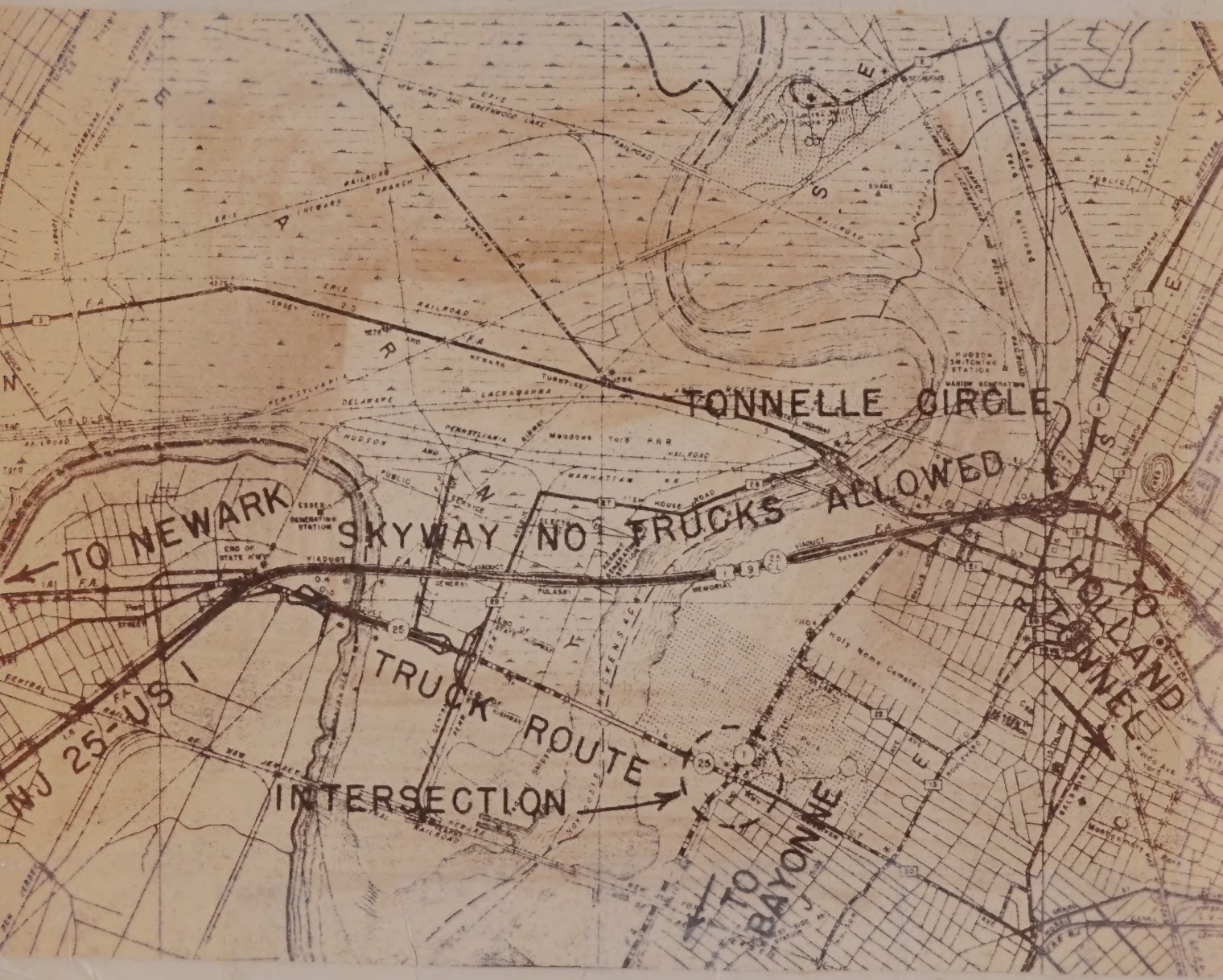
This "Before" and "After" study indicates that it is sometimes possible to increase the number of traffic signalized intersections and speed up traffic. It may be possible to expand this principle to the point where traffic signals combined with design may prove to be a means of temporarily deferring expensive grade separation construction for many years or may even prove to be satisfactory for an indefinite length of time.

At this intersection the re-design resulted in a saving of about one-half minute for the average car of the 45,000 cars per average day entering the intersection. This saving is the direct saving in travel time within the intersection area and does not include the time saved by increase in capacity and resultant elimination of long tie-ups.

Since the preparation of this report,. new traffic counts have been taken indicating that the intersection is being used by 65,000 cars per day instead of the 45,000 cars per day. Copies of the later counts are included although the text has not been adjusted. One explanation could be that drivers avoided this intersection during the "Before" period.

NJ
TE
176
T1
1950
c.1

At the intersection of State Route #1 and State Route #25 (truck route) in Jersey City, New Jersey, there was for many years a very severe traffic congestion problem. The description of the location is shown below.



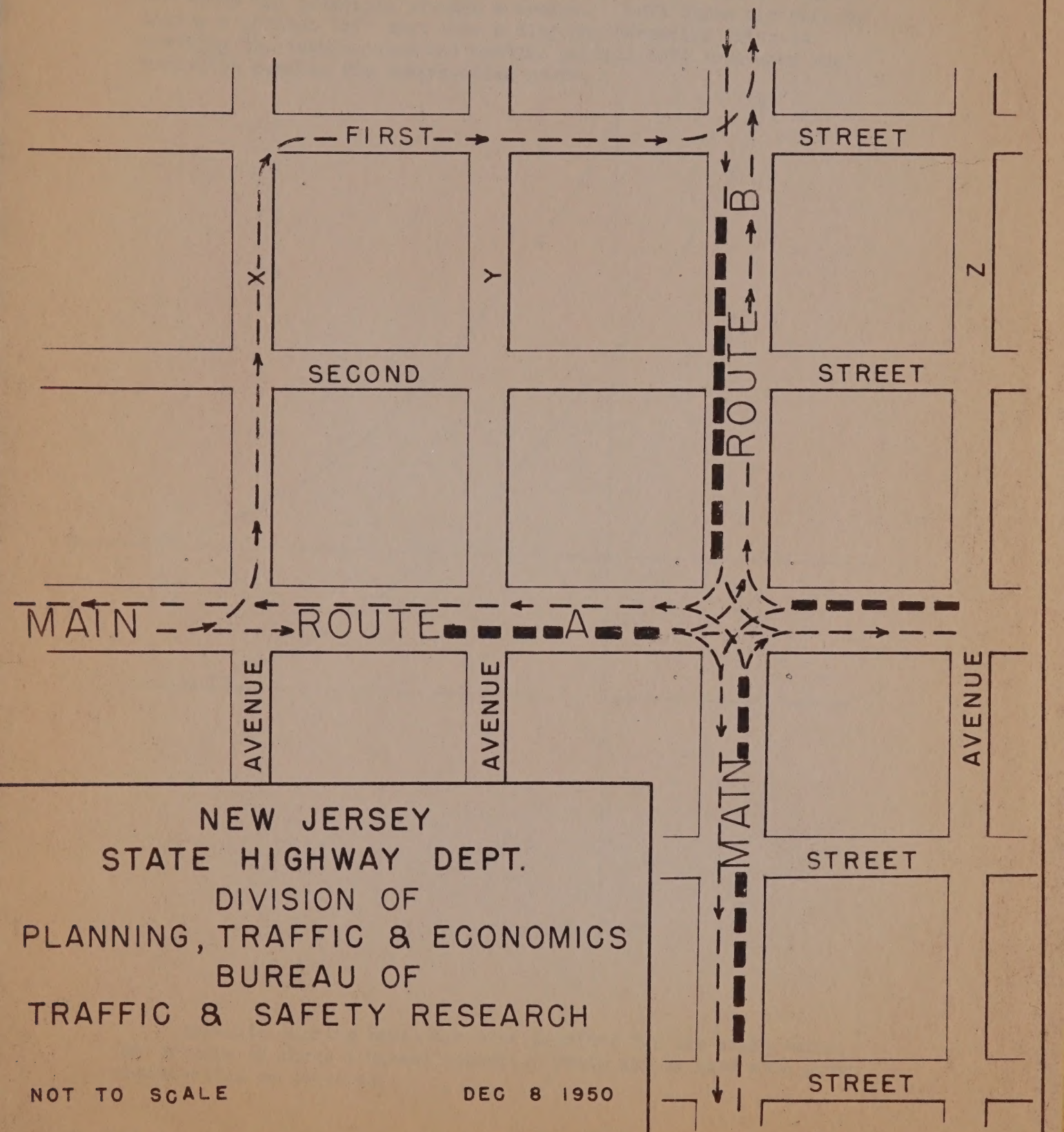
This was a simple right angle intersection at grade controlled by a traffic signal and traffic police. In order to improve this condition a novel design was adopted which provided two diagonal roads in addition to the existing roadways thereby creating three traffic signal controlled intersections in addition to the original one, making four signalized intersections. As a result, congestion has been practically eliminated.

Design Suggested by Traffic Behavior

In studying traffic behavior throughout the state with the viewpoint that the existing road network is a full scale testing laboratory with artificial adjustments unnecessary and with the attitude that drivers are right rather than wrong, it was noticed that many drivers adjust their normal routes during periods of peak congestion in order to search for a means of avoiding the congestion. In an area where a grid system of roads is available and where a main signalized intersection becomes congested repeatedly, it can be observed that many drivers turn off their normal road upon reaching the backed up traffic to use a parallel road and return to their route after passing the congestion. Figure "B" shows an example of this type of operation.

For cars intending to make a left turn at the main intersection much time can be saved by turning left at a street before reaching the rear of the congestion and at a time when there is a break in the opposite direction traffic, then proceeding to a parallel street, turning right and going to the street that would have been used after making the left turn normally and then turning left onto that street. With practice this can be done with a relatively continuous movement, slowing down only for the turns and without interfering with the movements of other vehicles.

SCHEMATIC DIAGRAM
OF A
TYPICAL GRID SYSTEM OF CITY STREETS
SHOWING
POSSIBLE ALTERNATE ROUTE FOR LEFT-TURNING VEHICLES



NEW JERSEY
STATE HIGHWAY DEPT.
DIVISION OF
PLANNING, TRAFFIC & ECONOMICS
BUREAU OF
TRAFFIC & SAFETY RESEARCH

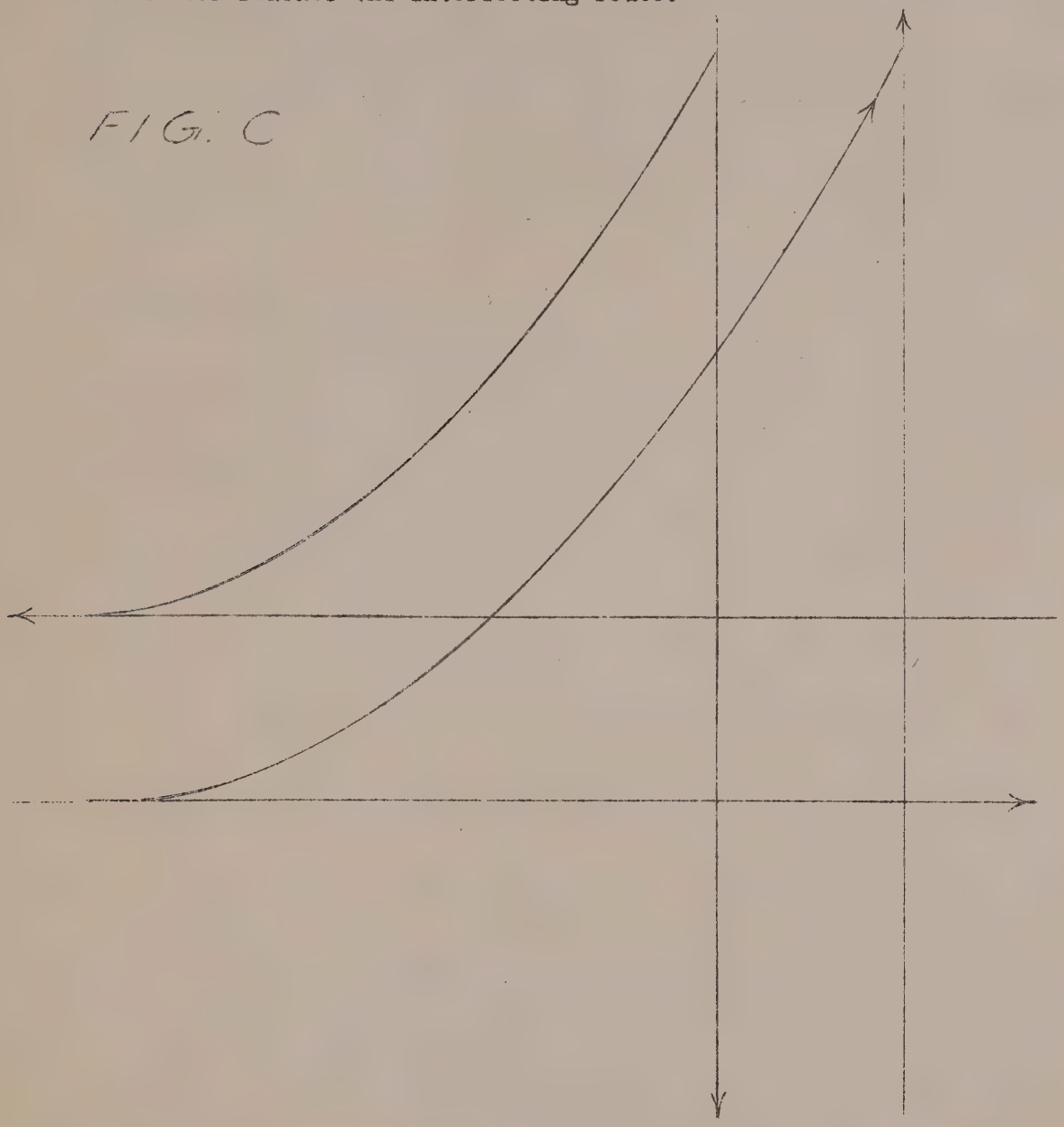
NOT TO SCALE

DEC 8 1950

FIG. B

This basic principle suggested the provision of specifically designed roads to best facilitate the left turn movement. Figure "C" shows the principle of such a design. Left turns are made by making a partial left turn into a diagonal connector prior to reaching the intersection and another partial left turn when the connector reaches the intersecting route.

FIG. C



Separate turning lanes are also provided for the right turns. One or more of these diagonal connector roads may be used at a given intersection as required.

Suitable Conditions for Testing of Design Principle

The problem at the intersection of Route 1 and Route 25 satisfied the requirements for testing such a design. Congestion was very extreme with traffic backed up almost daily for about $\frac{1}{2}$ mile on each approach road. Two of the left turns were significantly large requiring a four phase operation of the traffic signal which, during peak hours, was turned off and traffic alternated by traffic officers in the intersection. Modification by means of constructing a grade separation was considered but deferred because of the possibility of constructing a parallel route close by but which would probably not utilize this grade separation. A traffic circle was also considered but discarded because traffic volumes would exceed the capacity immediately. Lands needed for the diagonal road type improvement were vacant, and therefore relatively inexpensive, favoring the decision to test the new design principle. Figure "D" shows the basic design developed.

Prevailing Traffic Data

As shown in Figure "E" the annual average daily traffic volume passing through the intersection is over 45,000 cars per day. Peak hour volumes reach 3,500 cars per hour through the intersection repeatedly. The road towards Newark, Route 25 (truck road), has an average of 30,000 cars per day with 45% trucks. Heavy trucks, classified as two axle trucks with dual tires and all extra axle trucks, amounts to about 11,000 per average day. Classified by weight, 6,000 trucks per day exceed a weight of 10 tons and about 2,800 trucks exceed a weight of 20 tons.

(Additional Charts and Tables Showing Traffic Volumes at this Location are appended to this report as

Figures L M N and Tables 1, 2, 3)

NOTE:
THE POINTS MARKING THE END OF THE STRAIGHT THRU FROM COMMUNIPAW AVE. (LINE A), AND THE STARTS OF THE LEFT TURN TO THE HOLLAND TUNNEL AND THE RIGHT TURN TO BAYONNE, (LINES B & C), ARE OFF THE DRAWING TO THE LEFT.

POINT MARKING START OF RIGHT TURN TO NEWARK IS OFF DRAWING.

END OF LEFT TURN FROM BAYONNE

END OF RIGHT TURN FROM HOLLAND TUNNEL

CLOCKED DISTANCE

A
B
C

573'
628'
626'
83'
538'
631'
497'
741'
386'
330'
561'
520'
330'

START & END OF ALL OTHER CLOCKED DISTANCES

TO THE HOLLAND TUNNEL

ROUTE 1

TO NEWARK

START OF STRAIGHT THRU TO COMMUNIPAW AVE.

ROUTE 25

COMMUNIPAW AVE

START & END OF ALL CLOCKED DISTANCES

START OF RIGHT TURN TO COMMUNIPAW AVE & STRAIGHT THRU TO HOLLAND TUNNEL

START OF LEFT TURN TO NEWARK

END OF ALL CLOCKED DISTANCES

TO BAYONNE

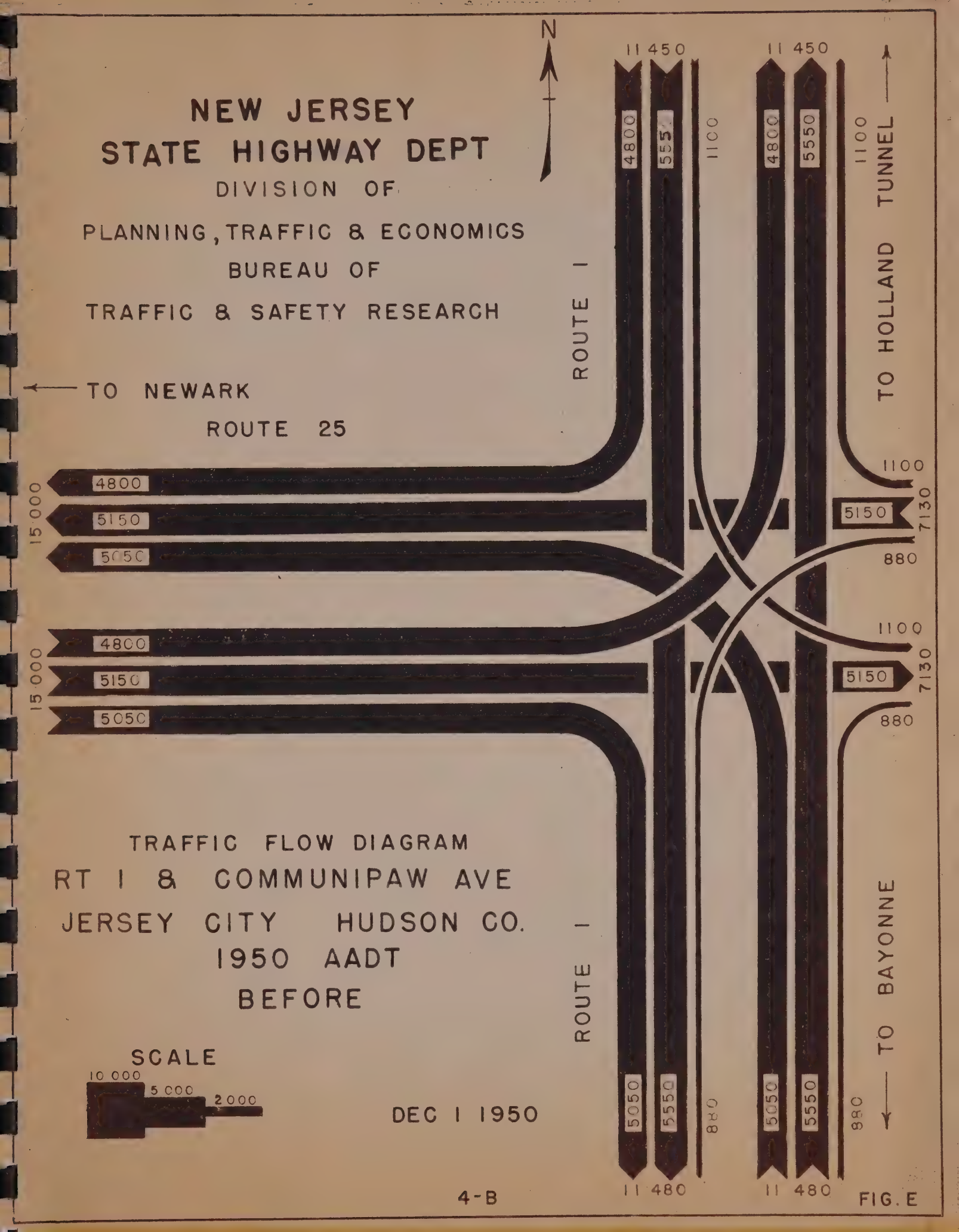
RT 1 & COMMUNIPAW AVE
JERSEY CITY HUDSON CO.
PLAN OF INTERSECTION

SCALE
1" = 50 FT
APPROX.

NEW JERSEY
STATE HIGHWAY DEPT.
DIVISION OF
PLANNING, TRAFFIC & ECONOMICS
BUREAU OF
TRAFFIC & SAFETY RESEARCH

FIG. D

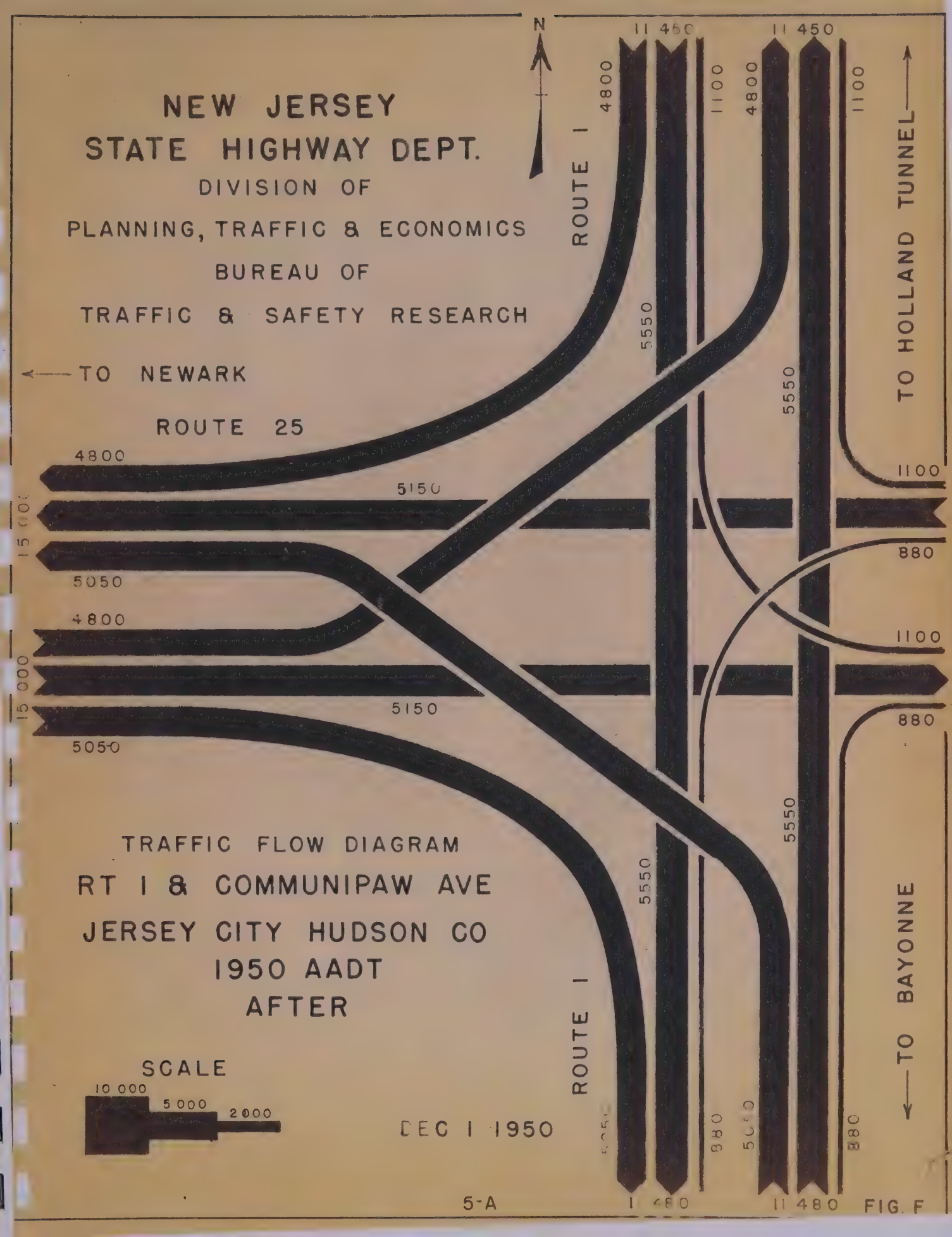
DEC 1950


NEW JERSEY
STATE HIGHWAY DEPT
DIVISION OF
PLANNING, TRAFFIC & ECONOMICS
BUREAU OF
TRAFFIC & SAFETY RESEARCH
TO NEWARK
ROUTE 25
N
11 450
11 450
4800
5550
4800
5550
1100
1100
ROUTE 1
TO HOLLAND TUNNEL
1100
5150
7130
880
15 000
4800
5150
5050
1100
5150
7130
880
15 000
4800
5150
5050
ROUTE 1
5050
5550
880
5050
5550
880
TO BAYONNE
11 480
11 480
TRAFFIC FLOW DIAGRAM
RT 1 & COMMUNIPAW AVE
JERSEY CITY HUDSON CO.
1950 AADT
BEFORE
SCALE
10 000
5 000
2000
DEC 1 1950
4-B
FIG. E

Principle of Design At Route 1 & Communipaw Ave.

The principal factor in the design is to locate the diagonal roadways so that the distances between intersecting roadways are such that signal timing can be synchronized to permit progressive movements of traffic with reasonably normal speeds. The two right turns corresponding to the two heavy left turns are also heavy movements. One way roadways were provided for them so that the right turn traffic could move at all times and not be involved in the signalized intersections. In this manner the problem at the signalized intersections was simplified.

Figure "F" shows the traffic flows as they occur on the new layout.


NEW JERSEY
STATE HIGHWAY DEPT.
DIVISION OF
PLANNING, TRAFFIC & ECONOMICS
BUREAU OF
TRAFFIC & SAFETY RESEARCH
N
TO NEWARK
ROUTE 25
ROUTE 1
TO HOLLAND TUNNEL
TO BAYONNE
4800
5150
5050
15 000
11 450
11 480
5550
1100
880
TRAFFIC FLOW DIAGRAM
RT 1 & COMMUNIPAW AVE
JERSEY CITY HUDSON CO
1950 AADT
AFTER
SCALE
10 000
5 000
2000
DEC 1 1950

5-A

FIG. F

While the intersection type was first proposed for use at Communipaw Avenue and Route 1 in 1941 it was not constructed until January 1950. Before the improvement, cars during the peak hour required an average of 66 seconds to get through the intersection, whereas after the improvement they required an average of 35 seconds. Constant users of the intersection were quick to realize the improvement, claiming savings up to 15 minutes. Some expressed their reaction by written comment.

Recorded Personal Impressions and Operational Data

When a condition of bad congestion is corrected, it is very easy to forget the previous condition and, therefore, the degree of improvement loses its significant impression. Without specific records, references to former conditions are very often doubted as exaggerations. Because of the possibility of wider use of the proposed principles, records were made of the "Before" and "After" conditions. These records included both personal impressions and detailed operational studies.

Mr. Robert Nolan, an Assistant Engineer with this Bureau, spent one day specifically observing traffic conditions and then recorded impressions. He lives in Trenton and, therefore, is not familiar with the intersection other than by this specific inspection. He was instructed as to normal conditions and what to look for so as to avoid some of the unnecessary details on which he might otherwise have concentrated his attention. It is intended that he will make an after observation and record his impression of the change. A similar report was made by Mr. R. Evenson, a Junior Engineer with the Bureau, who lives in Jersey City and, therefore, somewhat familiar with the past reputation of the intersection. He has since left our employment but it may be possible to still obtain from him an "After" report. Other unsolicited comments are available from drivers who used the intersection daily, and more comments could undoubtedly be obtained if the desire was made known. (Comments of Mr. Nolan and Mr. Evenson are appended to this report.)

The writer, by chance, met a traffic officer who had, previous to the redesign, been assigned to manual control at the intersection. The officer, not knowing the writer's connection with the redesign, and upon being questioned by others present, stated that traffic moved better with no control at all than with signals. He was very emphatic about it when questioned critically by others in the meeting. This finding concurred with impressions made on the two recorders, Mr. Downs and Mr. Evenson, and later supported by preliminary summaries and analysis.

The analytical data was collected by Mr. T. J. Downs, who is undoubtedly the best source of personal opinion concerning the degree of benefit of the change. He lives in Jersey City and has used the intersection often for many years. In recent years, before the improvement, he was aware of the proposed change every time he passed through the intersection. He made the time studies of cars passing through the intersection before the change and after the change, with no control, with fully actuated density control signals and with fixed progressively synchronized signals. All of these tests covered a combined period of about one year. In addition to the conclusions drawn from the data he collected, the authentic record of his personal impressions are of utmost value especially in support of conclusions from reported data.

A comment by Mr. Downs recording his personal impression after the collection of the field data is appended to this report.

Collection of Travel Time Data

It was planned to collect the time required by vehicles to travel through the intersection in such a manner that direct comparisons could be made of corresponding movements for traffic density variations, for average day volumes, for peak hour volumes, for trucks, passenger cars or total vehicles. Field work was done by one man so that personal equation factors would be constant and, therefore, compensating. As indicated above, studies were made of the following:

1. Before Reconstruction
2. After Reconstruction - No Control
3. After Reconstruction - Traffic Actuated Control
4. After Reconstruction - Fixed Time Control

Method Used In Time Studies

All of the time checks were made manually by means of a stop watch graduated in hundredths of a minute. The clocked distances were different for each movement but each started at a point previous to entering the intersection and ended at a point beyond the intersection. The beginning point was selected in an attempt to clock traffic before it was slowed up or stopped by other traffic waiting for the signal to change to green. This was impossible for the "Before" period because of the long distances of the backed up vehicles. Another handicap with the "Before" period was the difficulty in seeing long distances for turning traffic from accessible vantage points because of trees and other obstructions to sight. For the "After" period many of these obstructions were removed. It was also recognized that it was desirable to have the beginning and ending points of clocked distances the same for the same movements for each test. In order to compensate for the lack of these in the "Before" period, it was necessary to add increments of time to the beginning and end for the corresponding distances with assumed average speeds through these added distances. The adjustment was made with assumed faster speeds than are probable so that the comparison of "Before" and "After" is on the conservative side, giving the "Before" period less time loss than was actual. This

method was assumed to produce better accuracy than breaking the clocked distance into two sections for separate clockings, the average of which would be added to obtain the full distance.

There is a drawbridge on Communipaw Avenue, Route 25, Truck Road, about 2,000 feet from the intersection which opens frequently backing traffic into the intersection. Clockings were not made when this interfered with the intersection movements.

The tests were made without announcement so as to avoid abnormal behavior of traffic.

Clockings were made on week days during good weather and including morning peak hours, evening peak hours and the off hours in between. Cars were clocked from one of the four directions to each of the other three directions continually until significant samples were obtained for each unit of movement. In a few instances the unit of movement occurred so infrequently that a significant sample was not obtained because it would require a long time to get a few more samples which did not seem reasonably justified. By unit of movement is meant a passenger car making a left turn from Bayonne affected by the second red signal, or a truck going straight through from Newark and stopped at the first signal, etc.

One vehicle was clocked at a time in a random selection as follows: After a vehicle was clocked through its movement and the reading recorded according to its direction and signal condition the next vehicle at the starting point was clocked through its movement and recorded in its proper classification and so on as fast as possible within the ability of the recorder. Hourly recordings were made in order to permit correlation with hourly volumes. This procedure was assumed to produce reasonably accurate sampling in direct ratio with probability. The small deviation between maximum and minimum variations in times and the normal distribution within individual samples indicates that the assumption is reasonably sound.

After completion of each series of tests and the change made on the type of control, a period of at least one month was allowed before clocking the next series. This was to allow traffic to become acquainted if necessary.

Clocking points were set up and foresights selected from the vantage point using the same foresights and vantage point each day when clocking corresponding distances.

At first it was assumed that the clocked distances should include the extreme distance where cars were first affected by the backed up traffic. In this manner the total time saving advantage of the improvement could best be measured. Time checks were not made beyond generous limits of the "After" design principally because of lack of time available.

It so happened that this was not necessary to establish the justification of the improvement. If this should still be desirable, conservative reasonable estimates can be made as adjustments.

The true value of this study is for possible future application at other locations and for this purpose the assumed limits of the intersection are reasonably selected for application to other problems. The extent of the additional time loss is a function of the capacity of the intersection and the approaching traffic volume in excess of this capacity. This can be added for each particular case.

Preliminary Summary

Data has been summarized and average times applied to average volumes for comparison of the time saving advantages of each type of control. There is no question about the advantage of the new design over the old design because of the large reduction in time for the average car to pass through the intersection.

The preliminary summary of the data indicates that the average car passes through the intersection with the least time loss when there is no control at all. This is true during the peak hours as well as during off hours. The fixed time progressively synchronized signals results in the slightly greater time loss, "the 1022" fully actuated density type controller results in the still greater time loss and the original simple intersection with traffic signals proved to be the slowest for the average vehicle.

The study included the clocking of 14,557 vehicles.

Indicated Results

Based on the study there appears to be good justification for removing the signals and having no control at all. With fixed time and "the 1022" control, traffic requires about 20% more time to pass through the corresponding limits of the intersection than it does with no control.

Time, in seconds, to pass through corresponding limits of the intersection for the average car is shown as follows:

	A.A.D.T.	Peak Hour
No Control	31	27
Fixed Time	35	34
Fully Actuated	38	35
Original Intersection	64	66

(Summaries of travel time data are appended as Tables 4a, 4b, 5a, 5b and 6)

The objection to the No Control is the possible hazard to the cross traffic without controlled alternation of traffic. Because of the lack of high speeds and because of the small percent of strangers, it is quite improbable that No Control would result in more accidents than would signalized control. Nevertheless, because there is a lack of sufficient evidence supporting this fact, it is quite certain that Stop Street signs would be installed and enforced if light control were eliminated. This would slow up the average vehicle to the extent that the time advantage would be lost.

The choice then must be between the fixed time control and the 1022 control. The fixed time control is the less expensive and is also more efficient, and, therefore, should be the recommended type for such designs.

This tentative conclusion is founded on preliminary summaries and is, therefore, subject to adjustment after careful review.

Figure "G" shows diagramatically the traffic signal offsets. For instance, Communipaw Avenue westbound traffic would get a green signal at the westerly intersection 15 seconds after getting the green signal at the intersection of Route 1, and Communipaw Avenue eastbound traffic would receive a green signal at Route 1 15 seconds after receiving it at the westerly intersection (with a 60 second cycle).

Figures "H" and "J" show graphically the capacity of the intersection. Figure "H" represents the satisfactory capacity and Figure "J" the absolute capacity. In this manner the "bottlenecks" are shown. Comparisons of prevailing traffic volumes and the capacity volumes will show where congestion will probably begin as traffic volumes increase in the future.

NEW JERSEY STATE HIGHWAY DEPARTMENT

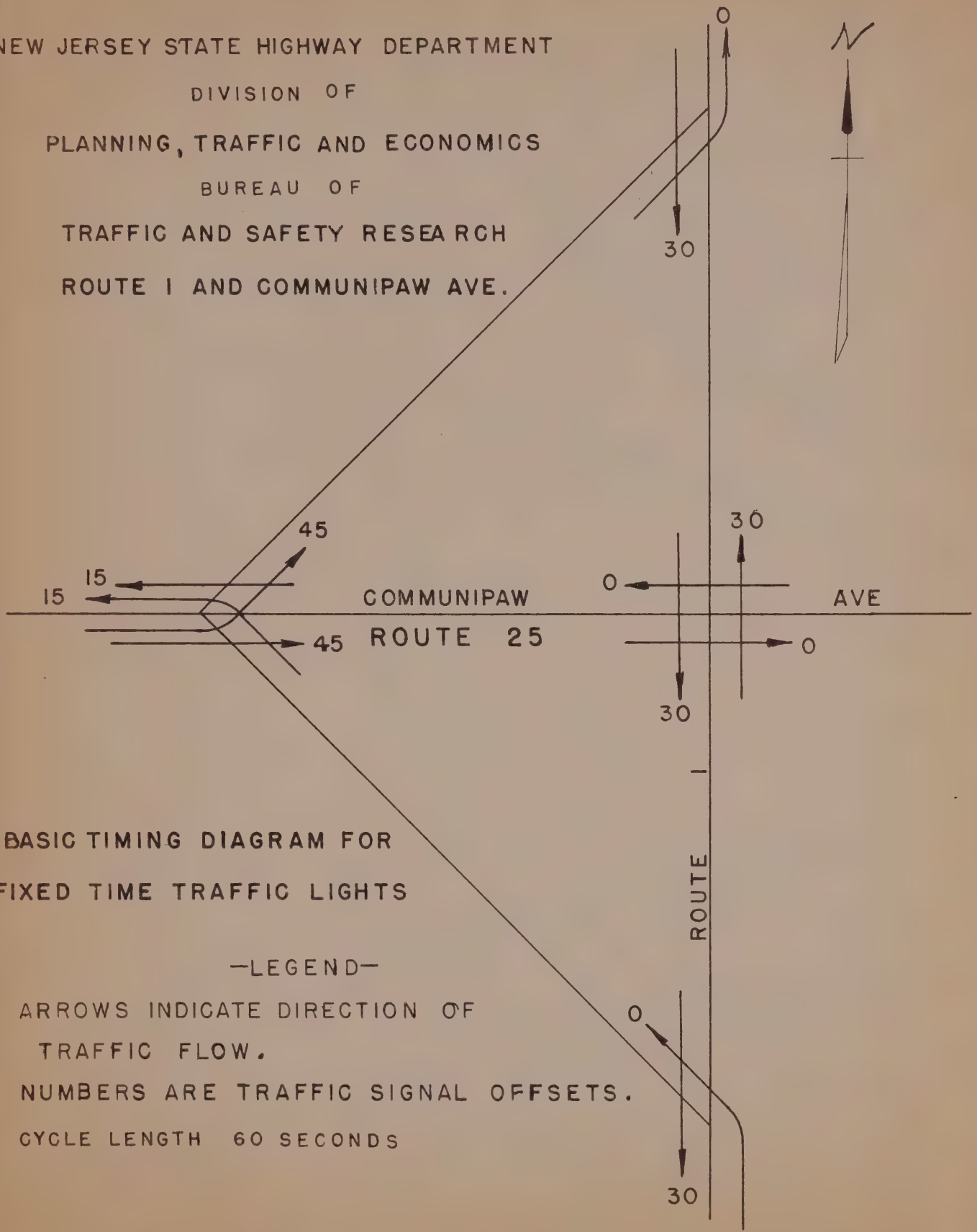
DIVISION OF

PLANNING, TRAFFIC AND ECONOMICS

BUREAU OF

TRAFFIC AND SAFETY RESEARCH

ROUTE 1 AND COMMUNIPAW AVE.



BASIC TIMING DIAGRAM FOR

FIXED TIME TRAFFIC LIGHTS

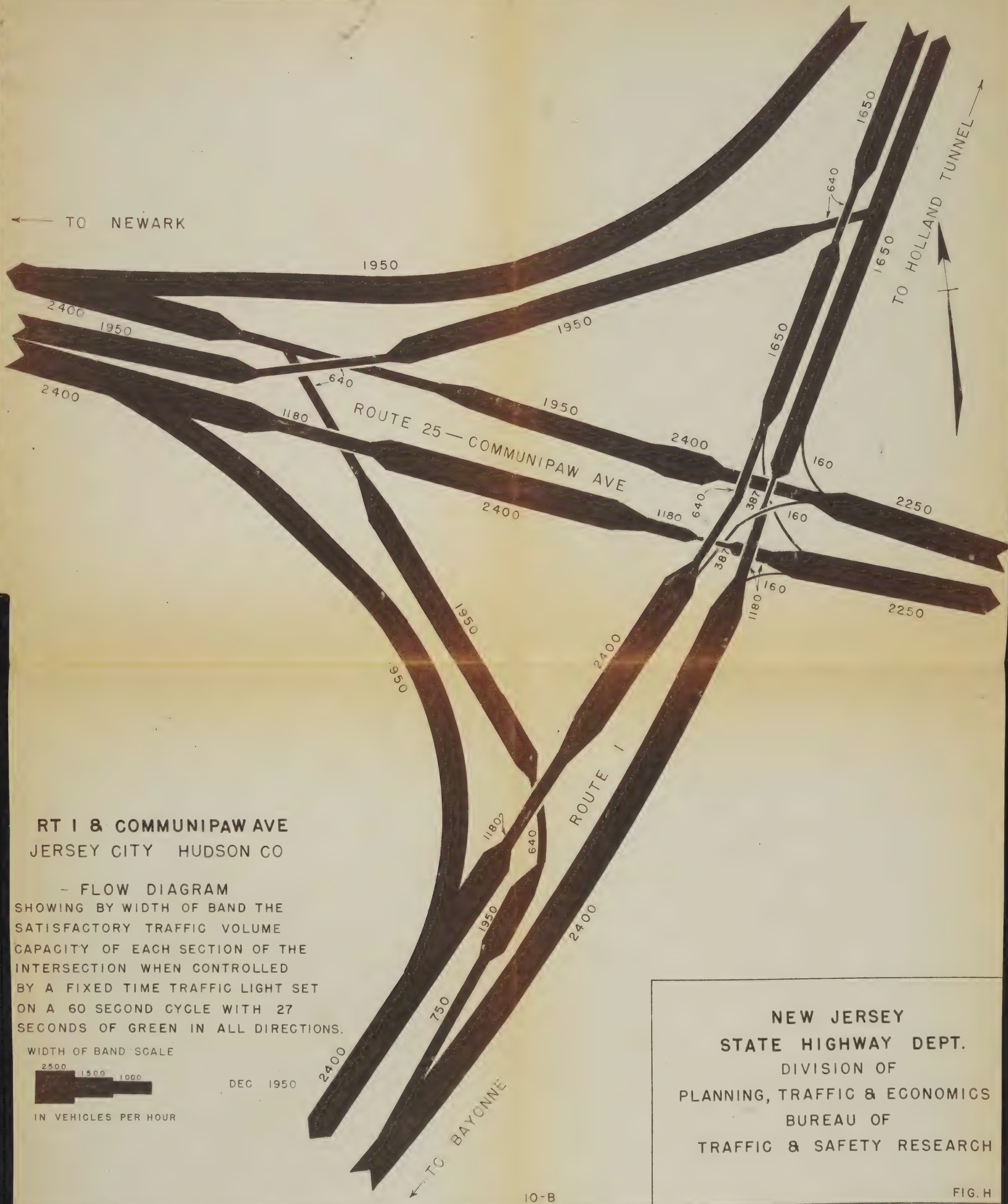
—LEGEND—

ARROWS INDICATE DIRECTION OF TRAFFIC FLOW.

NUMBERS ARE TRAFFIC SIGNAL OFFSETS.

CYCLE LENGTH 60 SECONDS

FIG. G



RT 1 & COMMUNIPAW AVE
JERSEY CITY HUDSON CO

- FLOW DIAGRAM

SHOWING BY WIDTH OF BAND THE SATISFACTORY TRAFFIC VOLUME CAPACITY OF EACH SECTION OF THE INTERSECTION WHEN CONTROLLED BY A FIXED TIME TRAFFIC LIGHT SET ON A 60 SECOND CYCLE WITH 27 SECONDS OF GREEN IN ALL DIRECTIONS.

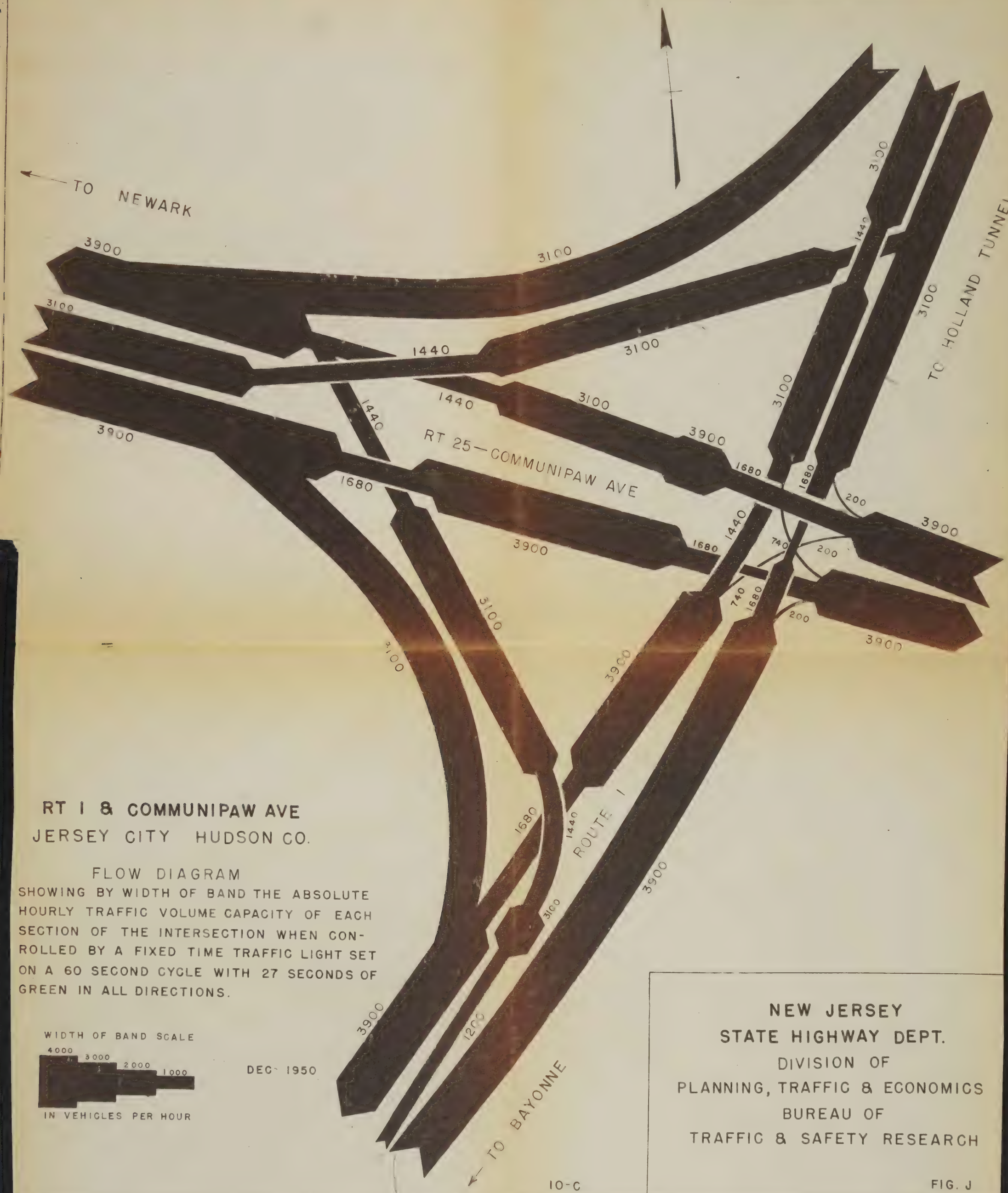
WIDTH OF BAND SCALE

IN VEHICLES PER HOUR

DEC 1950

NEW JERSEY
STATE HIGHWAY DEPT.
DIVISION OF
PLANNING, TRAFFIC & ECONOMICS
BUREAU OF
TRAFFIC & SAFETY RESEARCH

FIG. H



RT 1 & COMMUNIPAW AVE
JERSEY CITY HUDSON CO.

FLOW DIAGRAM

SHOWING BY WIDTH OF BAND THE ABSOLUTE HOURLY TRAFFIC VOLUME CAPACITY OF EACH SECTION OF THE INTERSECTION WHEN CONROLLED BY A FIXED TIME TRAFFIC LIGHT SET ON A 60 SECOND CYCLE WITH 27 SECONDS OF GREEN IN ALL DIRECTIONS.

WIDTH OF BAND SCALE

IN VEHICLES PER HOUR

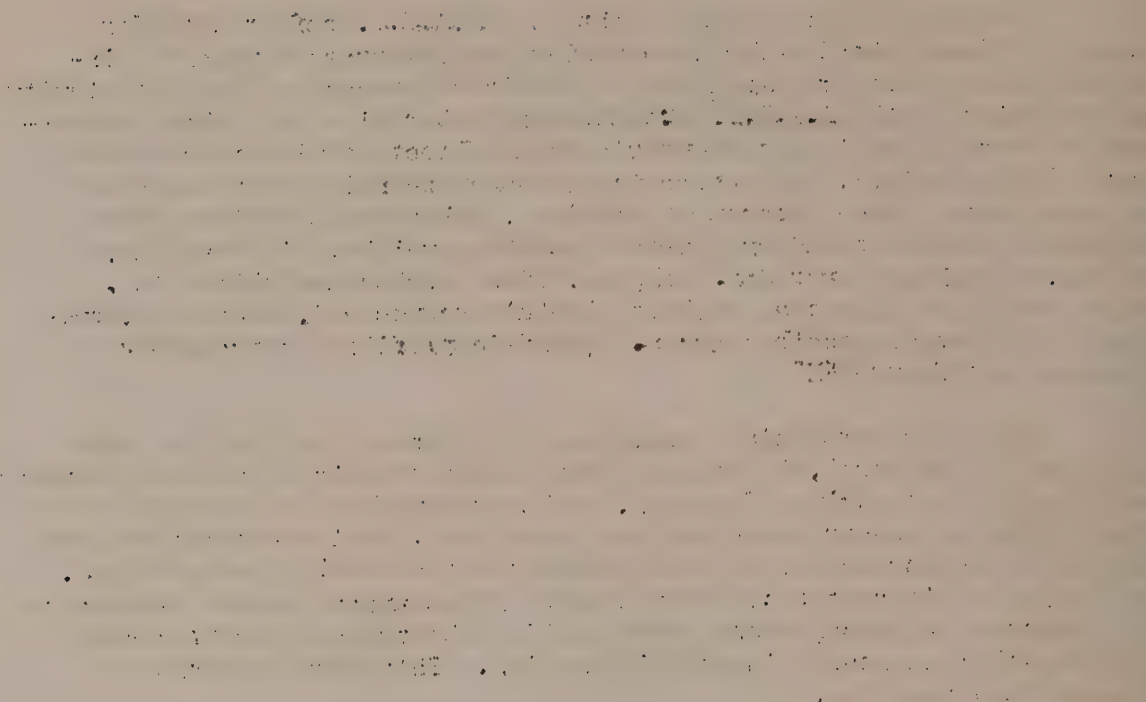
DEC. 1950

NEW JERSEY
STATE HIGHWAY DEPT.
DIVISION OF
PLANNING, TRAFFIC & ECONOMICS
BUREAU OF
TRAFFIC & SAFETY RESEARCH

FIG. J

It should also be noted that the A.A.D.T. referred to for Route 25 (Truck Road) of 30,000 vehicles per average day may be incorrect by a greater degree than is desirable because of the difficulty in arriving at the A.A.D.T. On this road there is a very high percentage of traffic which is industrial and subject to wide fluctuations from labor strikes. The controls used for expanding short counts are on other roads less affected by strikes. There were estimates from different controls and by different methods which varied from 25,000 to 38,000 vehicles per day. The 30,000 was selected arbitrarily. Other traffic volumes are related to this volume and, therefore, subject to the same possible error. (Traffic profile for two points attached as Figure "K")

From the preliminary summaries it is noted that for the condition of No Control, the speed of the average vehicle was faster during peak hours than during off hours. Similar comparison of data for the other types of control have not been made yet. This phenomena has been noticed in other samples of speed checks and is probably acceptable. That is, for increases of traffic density the average speeds increase up to a certain critical density above which the average speeds decrease with further increases in traffic density. This should probably be studied individually.



NEW JERSEY STATE HIGHWAY DEPARTMENT

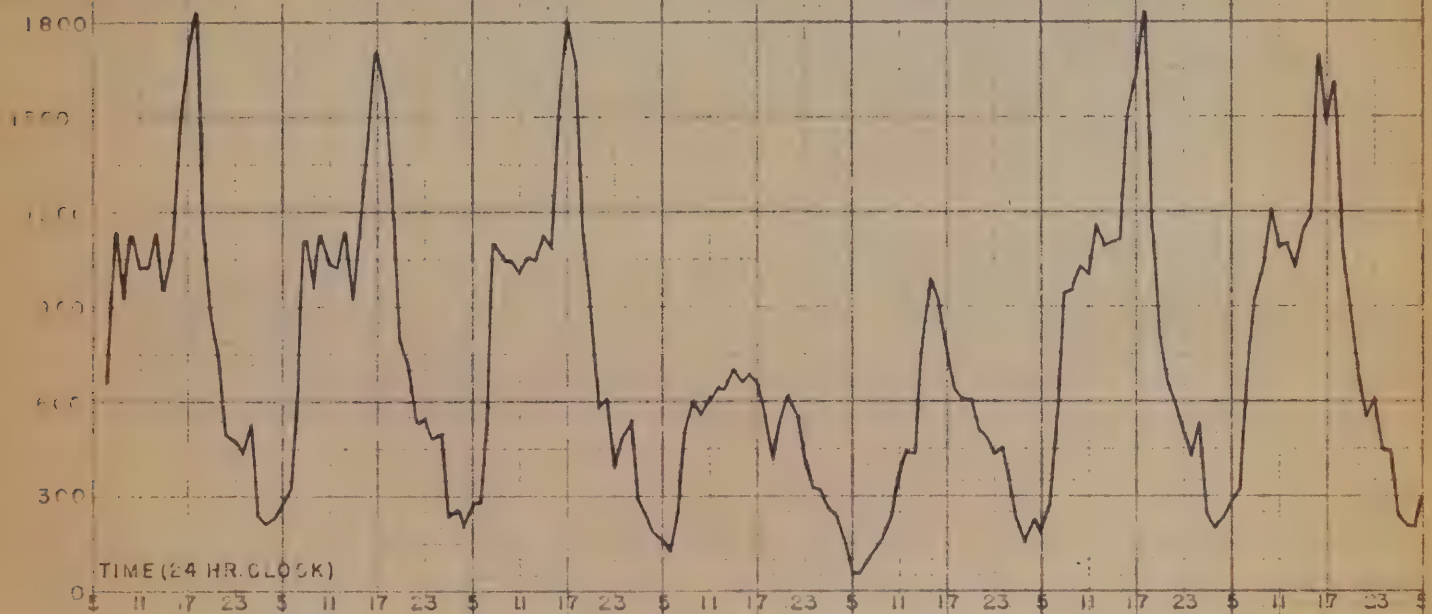
DIVISION OF PLANNING, TRAFFIC & ECONOMICS

BUREAU OF TRAFFIC & SAFETY RESEARCH

TRAFFIC VOLUME PROFILE GRAPHS

RT 25M WESTBOUND

0.3 MILE WEST OF PASSAIC RIVER BRIDGE, ESSEX COUNTY



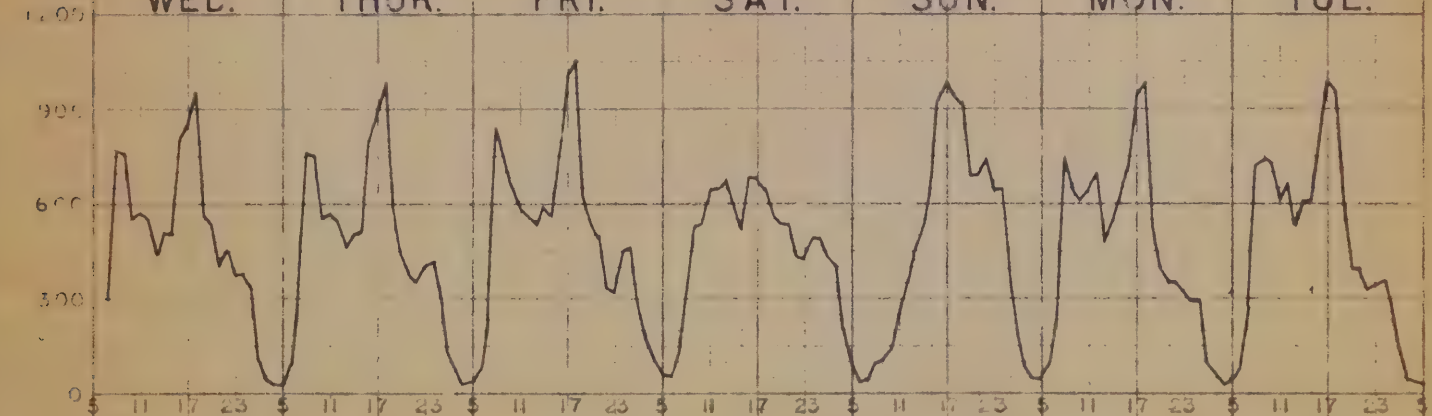
3-23-49	3-24	3-25	3-26	3-27	3-28	3-29-49
20 453	19 842	19 667	11 045	10 444	19 844	20 183

TOTAL WEEKLY VOLUME - 121,478

VOLUME

RT 1 SOUTHBOUND

BETWEEN CLARK AVE & RR BRIDGE, JERSEY CITY, HUDSON CO.



3-23-49	3-24	3-25	3-26	3-27	3-28	3-29-49
10790	10 834	11 954	11 129	10 619	10 654	11 218

TOTAL WEEKLY VOLUME 77,098

FIG. K

The following notes are for the purpose of clarifying the locations of the traffic profile graphs shown as Fig. K, Page 11-A:

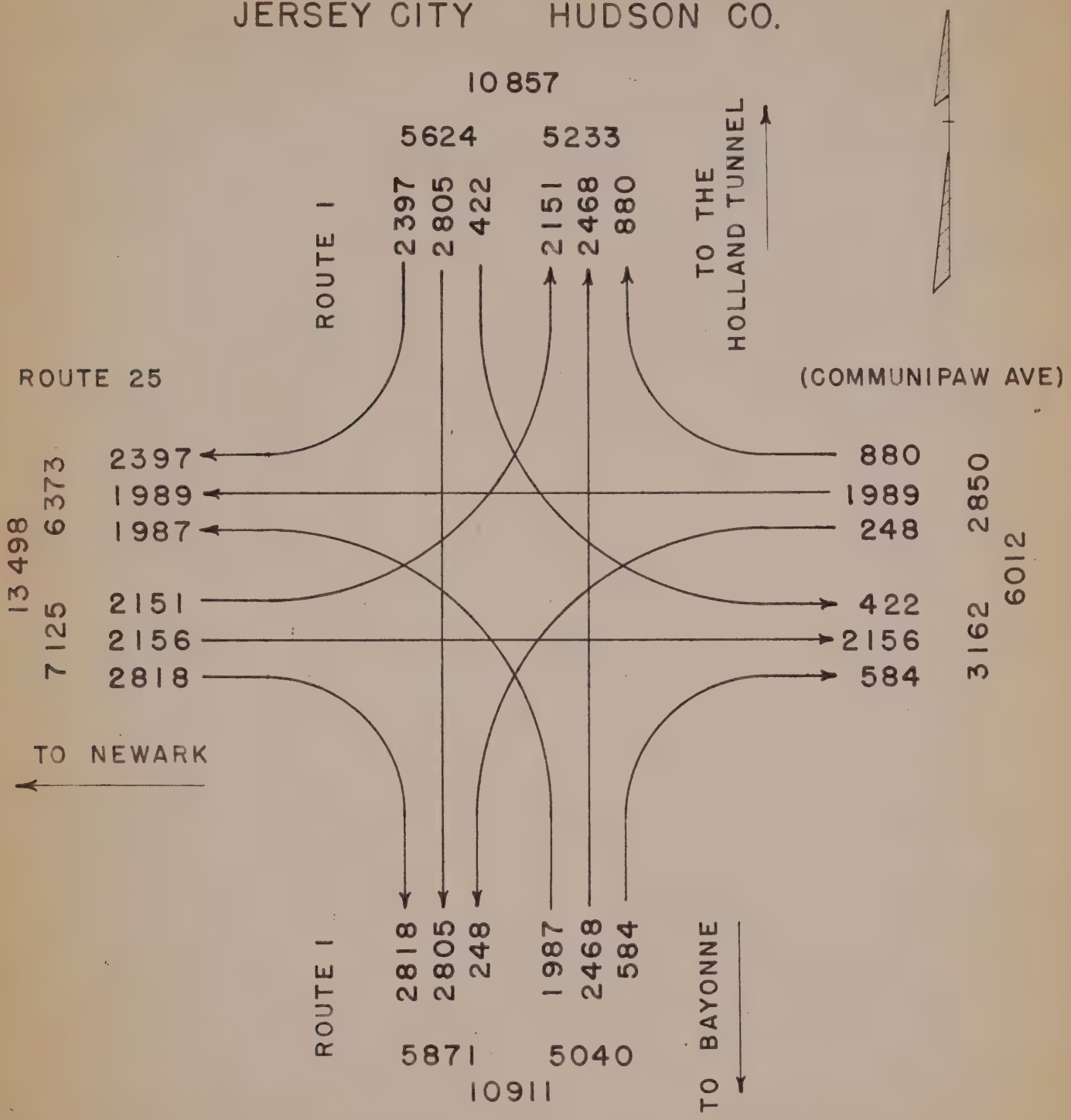
Profile Graph: Route 25 M, Westbound.

This traffic count was made on a continuation of the west leg of the intersection of Routes 1 and 25 (Communipaw Avenue) approximately 1.8 miles west of this intersection. There is one major intersection and several large industrial plants situated between Routes 1 and 25 (Communipaw Avenue) intersection and the location of this traffic count.

Profile Graph: Route 1, Southbound.

This traffic count was made on a continuation of the south leg of the intersection of Routes 1 and 25 (Communipaw Avenue) approximately 0.5 mile south of this intersection. There is one minor intersection and several small industrial plants situated between Routes 1 and 25 (Communipaw Avenue) intersection and the location of this traffic count.

TRAFFIC FLOW DIAGRAM
RT 1 & 25 (COMMUNIPAW AVE.)
JERSEY CITY HUDSON CO.

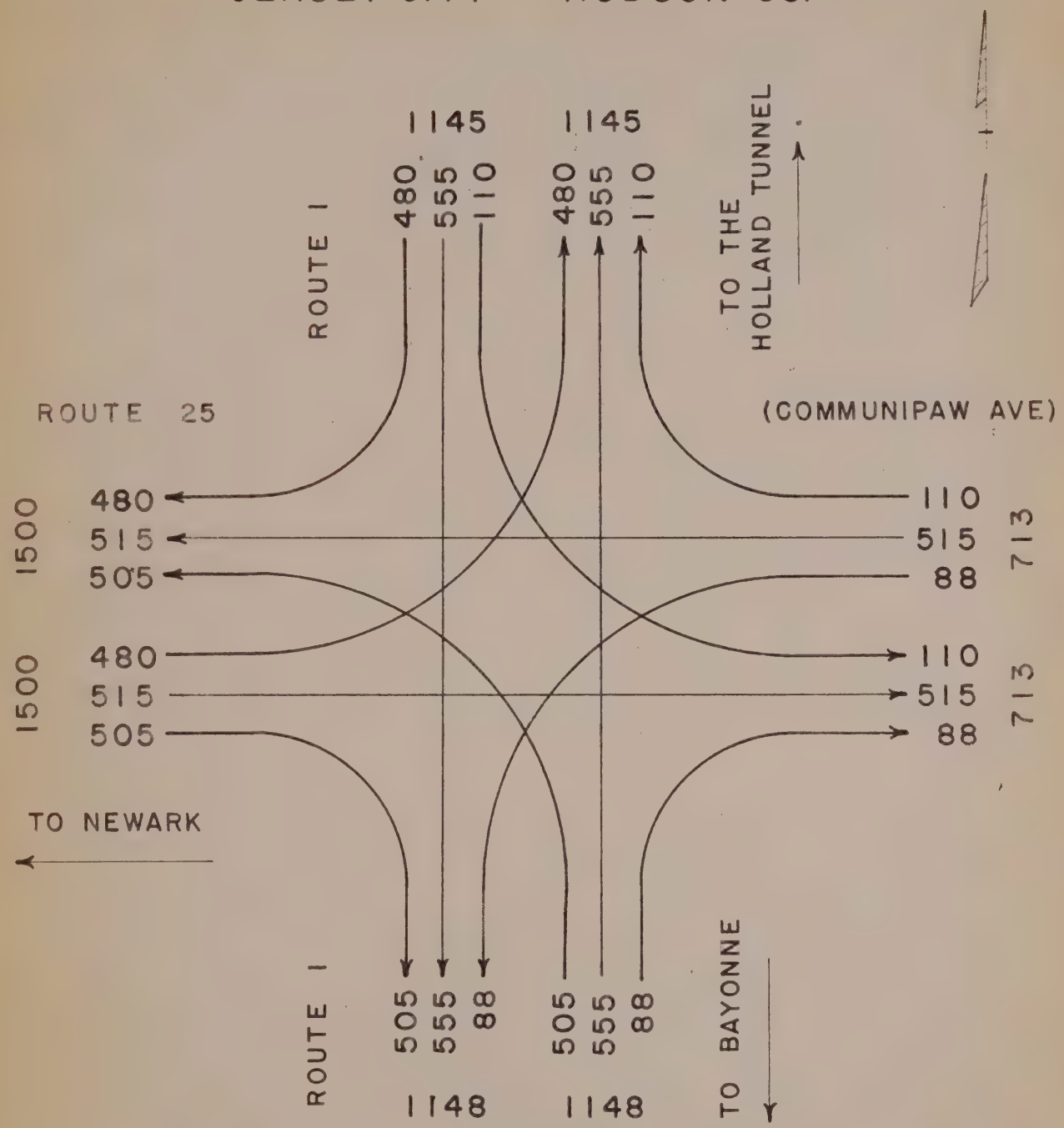


BEFORE REVISION

8 HOUR COUNT
10AM - 6 PM
TUESDAY, AUG 8 1949

FIG. L

TRAFFIC FLOW DIAGRAM
RT 1 & 25 (COMMUNIPAW AVE.)
JERSEY CITY HUDSON CO.

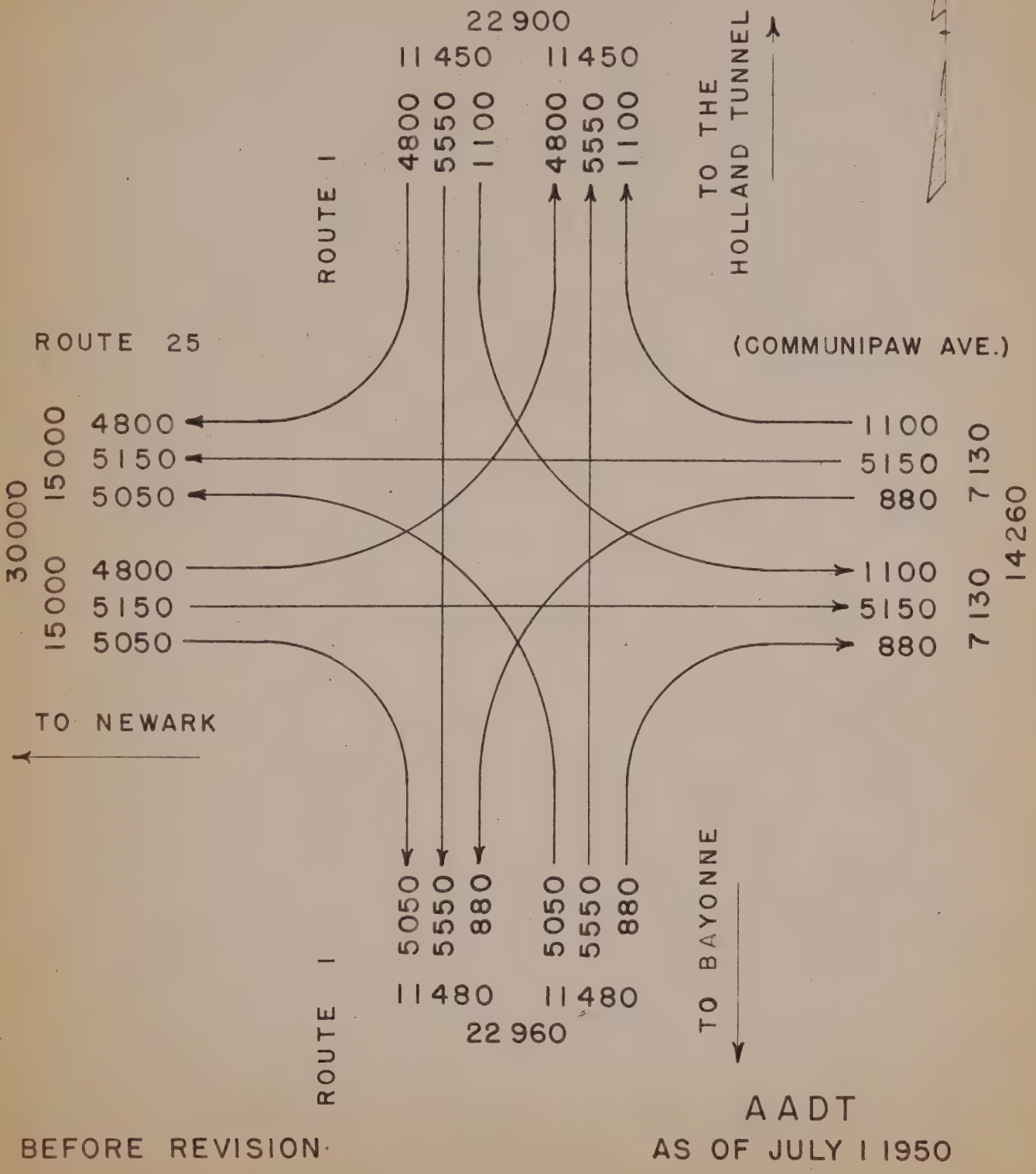


BEFORE REVISION

30TH PEAK HOUR
AS OF JULY 1 1950

FIG. M-1

TRAFFIC FLOW DIAGRAM
RT 1 & 25 (COMMUNIPAW AVE.)
JERSEY CITY HUDSON CO.

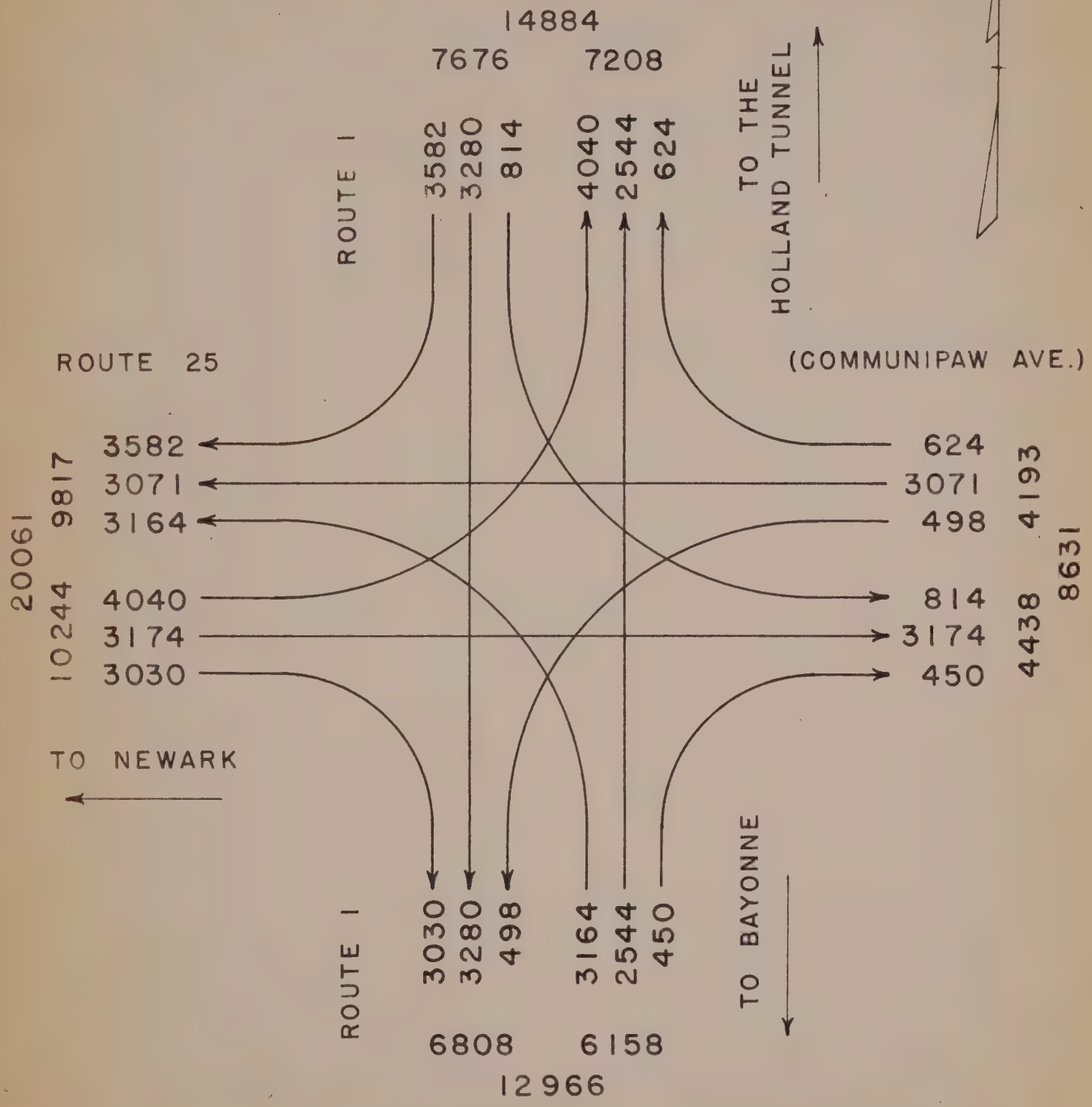


BEFORE REVISION

AADT
AS OF JULY 1 1950

FIG. N-1

TRAFFIC FLOW DIAGRAM
RT 1 & 25 (COMMUNIPAW AVE.)
JERSEY CITY HUDSON CO.

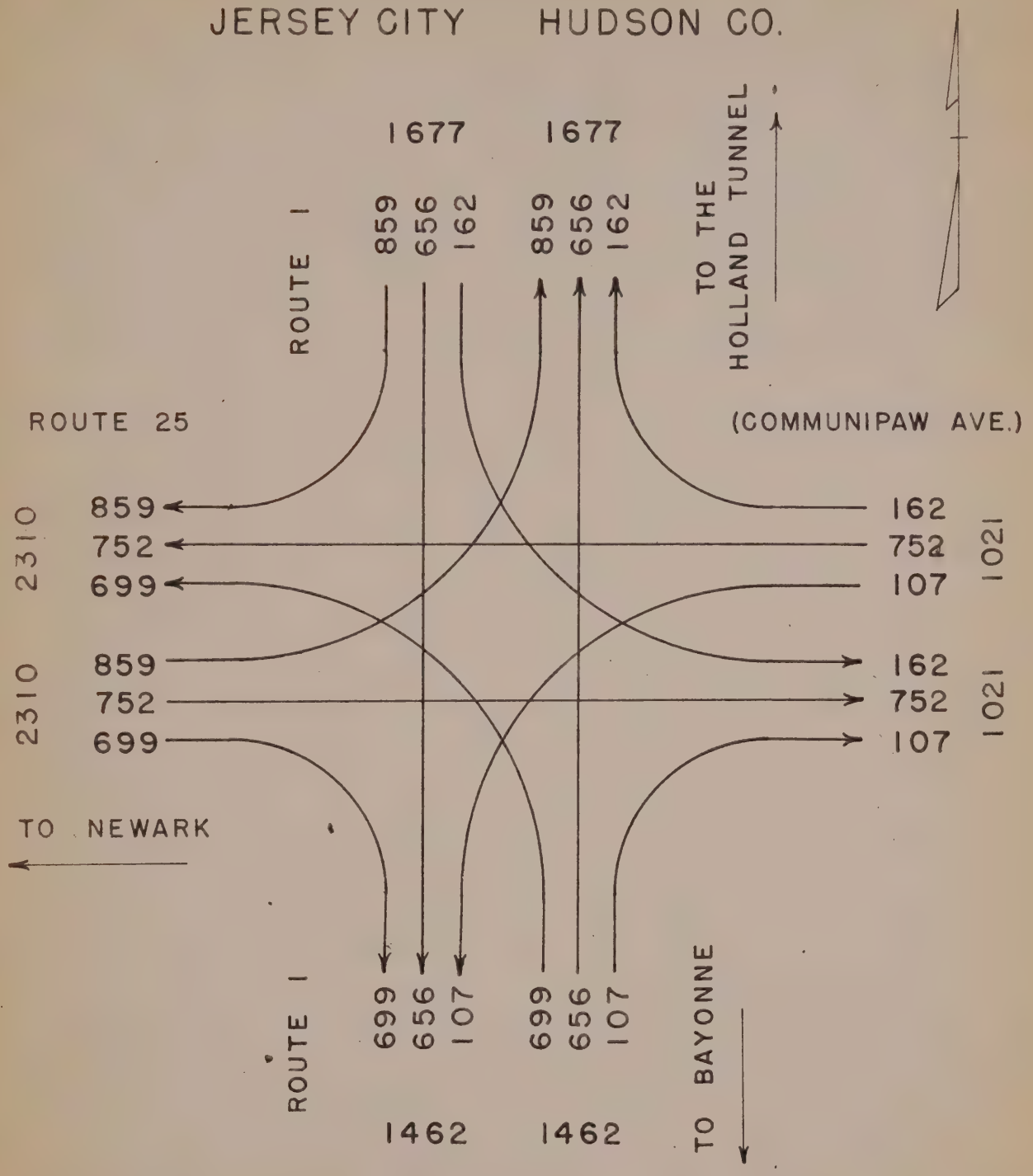


AFTER REVISION

8 HOUR COUNT
10AM-6 PM
WEDNESDAY, JAN 3 1951

FIG. L-2

TRAFFIC FLOW DIAGRAM
RT 1 & 25 (COMMUNIPAW AVE.)
JERSEY CITY HUDSON CO.

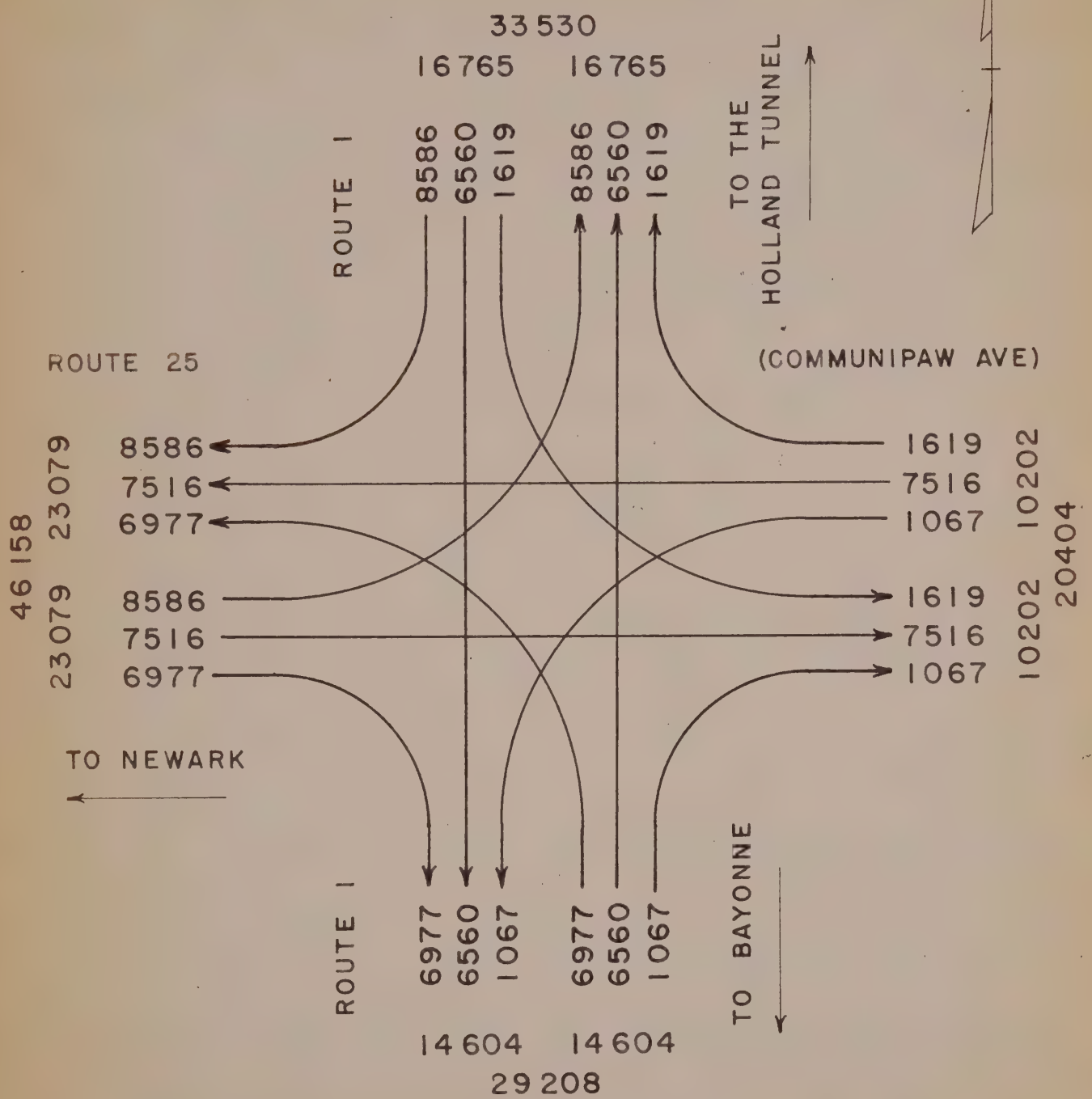


AFTER REVISION

30TH PEAK HOUR
AS OF JAN 1 1951

FIG. M-2

TRAFFIC FLOW DIAGRAM
RT 1 & 25 (COMMUNIPAW AVE.)
JERSEY CITY HUDSON CO.



AFTER REVISION

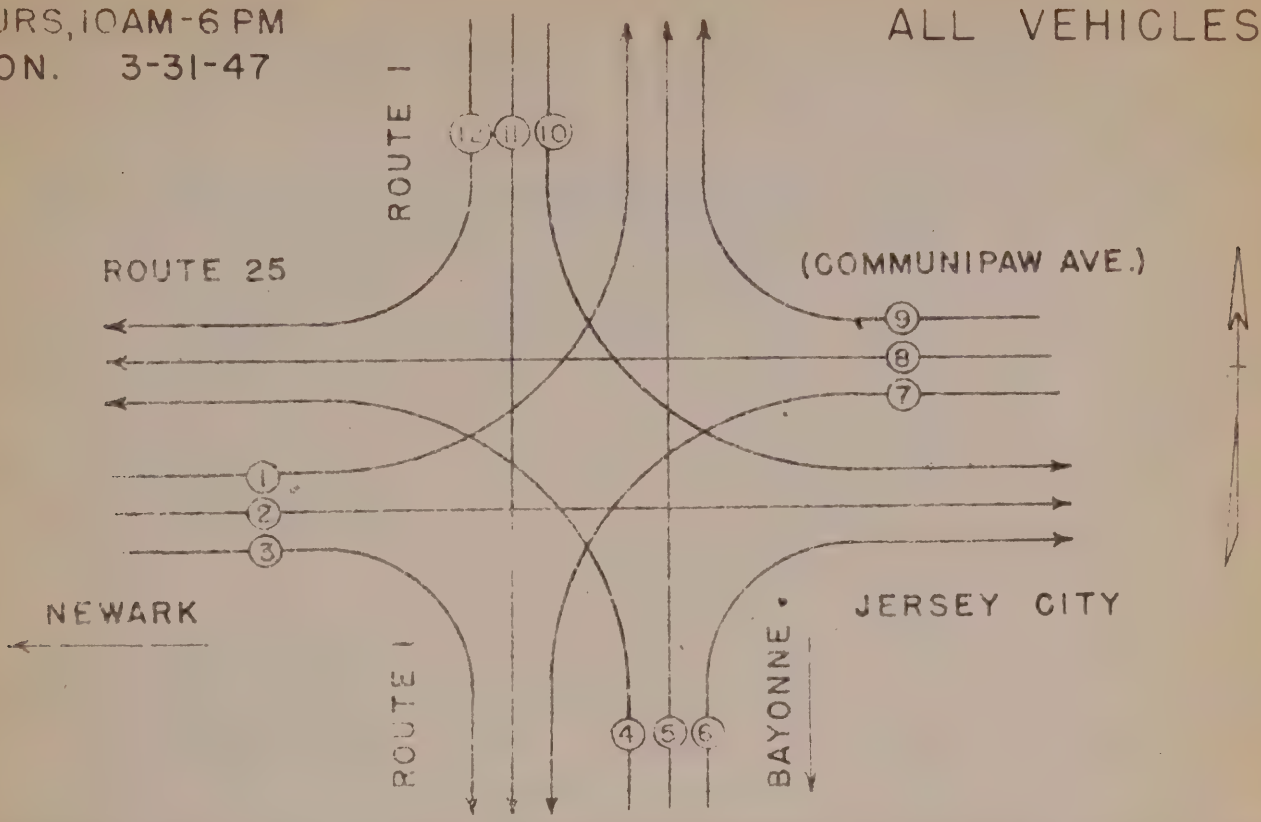
AADT
AS OF JAN 1 1951

FIG. N-2

INTERSECTION COUNT

8 HOURS, 10AM-6 PM
MON. 3-31-47

ALL VEHICLES



FROM	NEWARK				BAYONNE				JERSEY CITY				TONNELLE CIRCLE				
TO	TC	JC	B	TOT.	N	TC	JC	TOT.	B	N	TC	TOT.	JC	B	N	TOT.	
	1	2	3		4	5	6		7	8	9		10	11	12		TOTALS
10AM	341	261	121	723	159	231	49	439	27	241	45	313	52	197	214	463	1938
11	364	246	127	737	162	215	57	434	30	230	38	298	36	256	230	522	1991
12N	330	284	178	792	165	244	47	456	24	258	42	324	49	145	196	390	1962
1PM	387	312	151	850	179	248	63	490	33	269	49	351	58	138	218	414	2105
2 P	330	229	143	702	219	213	59	491	53	210	33	296	48	284	206	538	2027
3 P	522	385	183	1090	297	491	49	837	22	352	112	486	65	319	312	696	3109
4 P	594	552	699	1845	463	532	118	1113	31	375	109	515	20	450	447	917	4390
5 P	678	556	862	2096	473	558	96	1127	42	350	128	520	14	774	505	1293	5036
6PM																	
TOTAL	3546	2825	2464	8835	2117	2732	538	5387	262	2285	556	3103	342	2563	2328	5233	22558

Special Count - Passenger Cars and Trucks.

Special Count - (1-H-25)
(25A-H-20)

4-4-6-1

I. - T. - 61

From / To / Time (A.M.-P.M.)	Newark: Skyway 1	Newark: 2 A	Newark: New York 2 B	Newark: 2 C	Newark: Bayonne 3	Newark: Total 1-3	Bayonne: Newark 4	Bayonne: 5 A	Bayonne: Skyway 5 B	Bayonne: 5 C	Bayonne: N.Y. 6	Bayonne: Total 4-6	New York: Bayonne 7	New York: 7 A	New York: Newark 8 B	New York: 8 C	New York: Skyway 9	New York: Total 7-9	Skyway: New York 10	Skyway: 11 A	Skyway: Bayonne 11 B	Skyway: 11 C	Skyway: Newark 12	From / To: Total (1-12)
10-11	341		261		121	723	159		231		49	439	27		241		45	313	52		197		214	463
11-12	364		246		127	737	162		215		57	434	30		230		38	298	36		256		230	522
12-1	330		284		178	792	165		244		47	456	24		258		42	324	49		145		196	390
1-2	397		312		151	850	179		248		63	490	33		269		49	351	58		138		218	414
2-3	330		229		143	702	219		213		59	491	53		210		33	296	48		284		206	538
3-4	522		385		183	1090	297		491		49	837	22		352		112	486	65		319		312	696
4-5	594		552		699	1845	463		532		118	1113	31		375		109	515	20		450		447	917
5-6	678		556		862	2096	473		558		96	1127	42		350		128	520	14		774		505	1293
Total	3546		2825		2464	8835	2117		2732		538	5387	282		2285		556	3103	342		2563		2328	5233

From / To / Time (A.M.-P.M.)	13	14 A	14 B	14 C	15	Total 13-15	16	17 A	17 B	17 C	18	Total 16-18	From / To: Grand Total
10-11													1938
11-12													1991
12-1													1962
1-2													2105
2-3													2027
3-4													3109
4-5													4390
5-6													5036
Total													22558

Day: Monday Date: 3-31-47

Time - From: 10 AM To: 6 PM

Weather: Clear

Temperature: 45

Recorder: Caggiano & Vigorito

Code No. _____

New Jersey
State Highway Dept.

Intersection
Traffic Count

Route and Location: Route 1 and Communipaw Avenue

County: Hudson

Municipality: Jersey City

Total Pedestrian Count - 12.

Caggiano
From: Newark To: Jersey City & return
Travel Time: 90 min. 20 Miles

Vigorito
From: Paterson To: Jersey City & return
Travel Time: 2 hrs. 5 min. 40 Miles

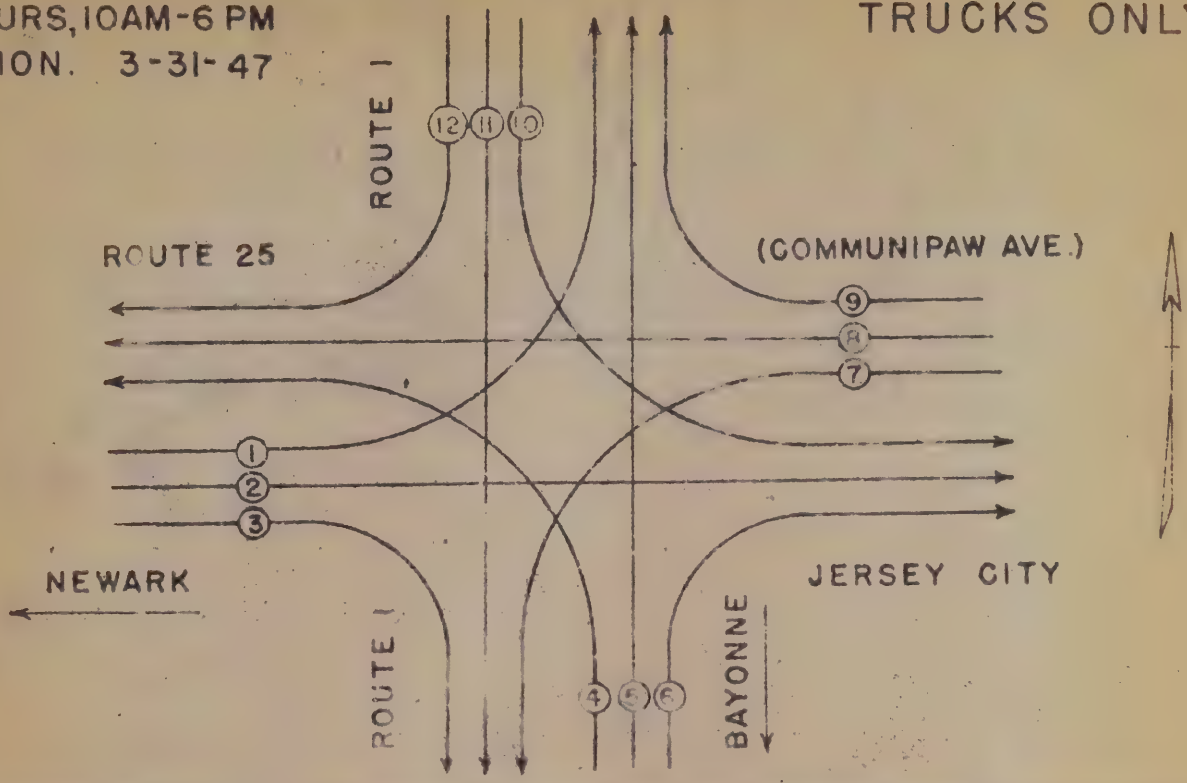
II-E

TABLE I

INTERSECTION COUNT

8 HOURS, 10AM-6 PM
MON. 3-31-47

TRUCKS ONLY



FROM	NEWARK				BAYONNE				JERSEY CITY				TONNELLE CIRCLE				
TO	TC	JC	B	TOT.	N	TC	JC	TOT.	B	N	TC	TOT.	JC	B	N	TOT.	
	1	2	3		4	5	6		7	8	9		10	11	12		TOTALS
10AM 11A	262	59	33	354	78	102	8	188	9	68	21	98	11	93	198	302	942
11A 12N	267	53	29	349	70	85	5	160	6	60	18	84	14	112	204	330	923
12N 1PM	258	63	31	352	74	125	7	206	5	72	25	102	23	58	169	250	910
1 P 2 P	281	71	37	389	76	97	5	178	7	68	24	99	31	98	219	348	1014
2 P 3 P	289	89	48	426	56	82	18	156	14	70	17	101	19	79	147	245	928
3 P 4 P	317	137	64	518	66	108	12	186	11	75	23	109	17	107	222	346	1159
4 P 5 P	143	61	22	226	72	68	17	157	8	53	13	74	4	49	109	162	619
5 P 6PM	135	92	17	244	53	49	17	119	9	83	21	113	11	38	252	301	777
TOTAL	1952	625	281	2858	545	716	89	1350	69	549	162	780	130	634	1520	2284	7272

TABLE 2

13 - T - 61

Special Count - Trucks Only.

Special Count - (1-H-25)
(25A-H-20)

49-6-1

From	Newark						Bayonne						New York						Skyway					
To	Skyway		N.Y.		Bay-onne		Newark		Skyway		N.Y.		Bay-onne		Newark		Skyway		N.Y.		Bay-onne		Newark	
Time AM-PM	1	2 A	2 B	2 C	3	Total 1-3	4	5 A	5 B	5 C	C	Total 4-C	7	8 A	8 B	8 C	9	Total 7-9	10	11 A	11 B	11 C	12	
10-11	262		59		33	354	78		102		8	188	9		68		21	98	11		33		198	302
11-12	267		53		28	348	70		85		5	160	6		60		18	84	14		112		204	330
12-1	258		63		31	352	74		125		7	206	5		72		25	102	23		56		169	250
1-2	281		71		37	389	76		97		5	178	7		68		24	99	31		36		219	348
2-3	289		89		48	426	56		82		18	156	14		70		17	101	19		79		147	245
3-4	317		137		64	518	66		108		12	186	11		75		23	109	17		107		222	347
4-5	143		61		32	236	72		88		17	157	8		53		13	74	4		49		109	162
5-6	135		92		17	244	53		49		17	119	9		83		21	113	11		38		252	301
Total	1952		625		310	2858	645		756		89	1350	69		549		162	780	130		634		1520	2284

From																								
To																								
Time AM-PM	13	14 A	14 B	14 C	15	Total 13-15	16	16 A	16 B	16 C	18	Total 16-18												
10-11																							942	
11-12																							923	
12-1																							910	
1-2																							1014	
2-3																							928	
3-4																							1169	
4-5																							619	
5-6																							777	
Total																							7272	

Day: Monday Date: 3-31-47

Time - From: 10 AM To: 6 PM

Weather: Clear

Temperature: 45

Recorder: Caggiano & Vigorito

Code #

Intersection Traffic Count

Route and Location: Route 1 and Communipaw Avenue

County: Hudson

Municipality: Jersey City

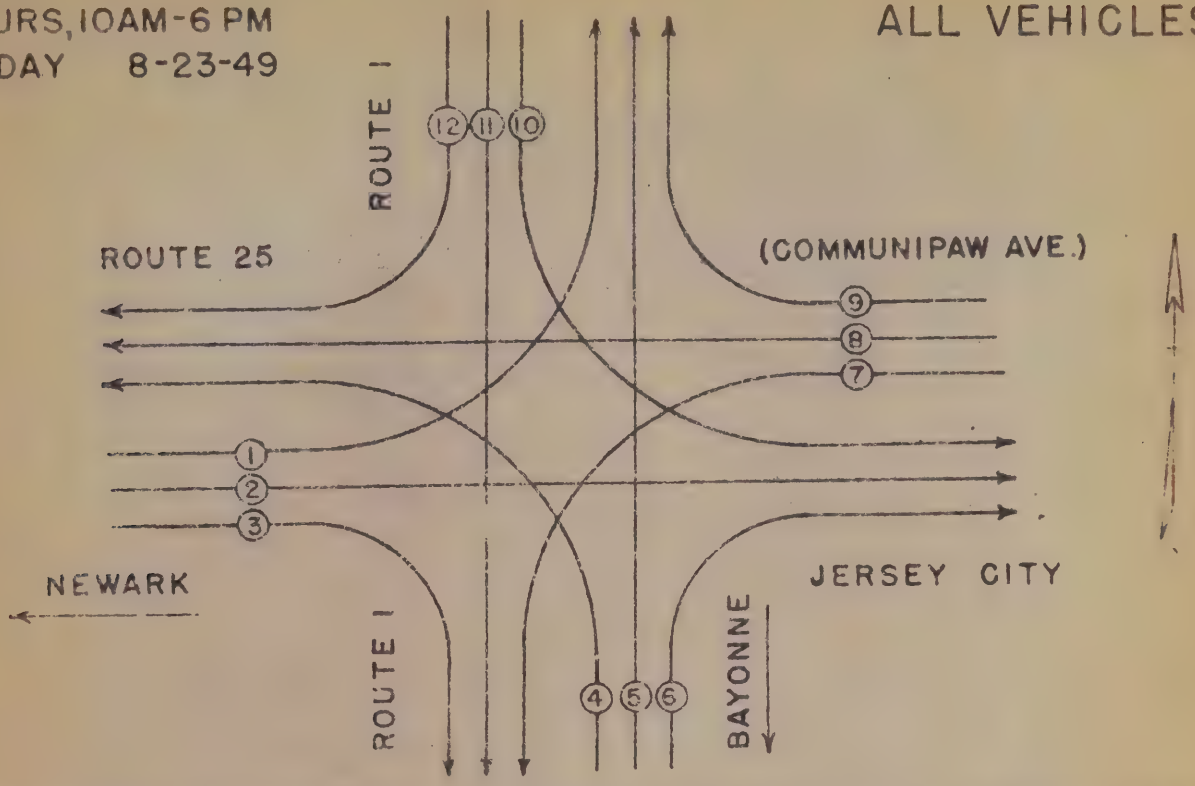
From _____ To _____ Travel Time _____ Miles

From _____ To _____ Travel Time _____ Miles

INTERSECTION COUNT

8 HOURS, 10AM-6 PM
TUESDAY 8-23-49

ALL VEHICLES



FROM	NEWARK				BAYONNE				JERSEY CITY				TONNELLE CIRCLE				
TO	TC	JC	B	TOT.	N	TC	JC	TOT.	B	N	TC	TOT.	JC	B	N	TOT.	
	1	2	3		4	5	6		7	8	9		10	11	12		TOTALS
10 AM	270	247	213	730	232	261	39	532	23	238	64	325	45	317	305	667	2254
11 A	300	244	239	783	246	253	43	542	23	225	83	331	67	329	295	691	2347
12N	279	183	174	636	217	242	47	506	33	196	90	319	49	303	278	630	2091
1 P	285	196	235	716	225	285	53	563	38	269	76	383	45	294	309	648	2310
2 P	269	206	211	686	238	256	66	560	36	262	64	362	41	289	301	631	2239
3 P	293	333	503	1129	247	277	74	598	31	292	72	395	47	339	294	680	2802
4 P	250	361	580	1191	325	471	123	919	26	257	89	372	68	441	311	820	3302
5 P	205	386	663	1254	257	424	139	820	38	250	75	363	60	493	304	857	3294
6PM																	
TOTAL	2151	2156	2818	7125	1987	2469	584	5040	248	1989	613	2850	422	2805	2397	5624	20639

TABLE 3

4-7-6-1

BPS-T-61 Rev. June 49

New Jersey State Highway Department
Division of Planning and Economics - Bureau of Highway Planning Survey
Intersection Count

Location Communipaw Ave. & N.J. Rt. 1 County Hudson Municipality Jersey City Code Special

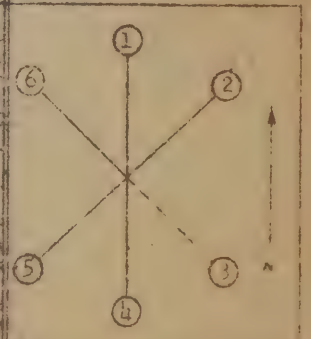
From	Duncan Ave.						Mallory Ave.						Clendenny Ave.						Central Ave. (Kearny)					
	Leg 1 N.J. Rt. 1						Leg 2 Communipaw Ave.						Leg 3 N.J. Rt. 1						Leg 4 Communipaw Ave.					
Time / To	2	3	4	5	6	Total	3	4	5	6	1	Total	4	5	6	1	2	Total	5	6	1	2	3	Total
10-11 A.M.	45	317	305			667	23	238			64	325	232			261	39	532			270	247	213	730
11-12	67	329	295			691	23	225			83	331	296			253	43	592			300	294	239	793
12-1 P.M.	49	303	278			630	33	196			90	319	217			242	47	506			279	183	174	636
1-2	45	284	309			698	38	269			76	383	225			285	53	563			285	196	235	716
2-3	41	269	301			631	36	262			64	362	238			256	66	560			269	206	211	686
3-4	47	329	294			680	31	292			72	395	247			277	74	598			293	332	503	1128
4-5	38	441	311			810	26	247			89	372	325			471	123	919			250	361	380	1191
5-6	68	391	364			857	38	250			75	363	257			424	139	820			305	356	613	1274
Total	422	2805	2397			5624	248	1989			613	2850	1987			2469	589	5040			2151	2156	2818	7125

From	Ped. Trans. Crossing						Leg 6					
Time / To	4	1&3	2&4	5	6	Total	1	2	3	4	5	Total
10-11 A.M.		5	3			8						
11-12	4	10	5			19						
12-1 P.M.		4	2			6						
1-2		2	1			3						
2-3		15	3			18						
3-4		14	2			16						
4-5		10	5			15						
5-6		14	3			17						
		74	24			101						

Summary

From / To	Leg 1	Leg 2	Leg 3	Leg 4	Leg 5	Leg 6	Inbd. Total
Leg 1		422	2805	2397			5624
Leg 2	613		248	1989			2850
Leg 3	2469	589		1987			5040
Leg 4	2151	2156	2818				7125
Leg 5							
Leg 6							
Outbd. Total	5233	3167	5871	6373			20644
Inbound	5624	2850	5040	7125			20639
Both Direct.	10857	6017	10911	13498			41278

Number legs as indicated below.



Taken by [illegible] Date 6/12/49 Time: From 10 A.M. To 6 P.M. Weather Clear Temperature 81° Recorder Saul Mogul, Engr. H. Egbert

From Newark To Jersey City Travel Time 15 min. Miles From Jersey City To Newark Travel Time 20 min. — 18 Miles

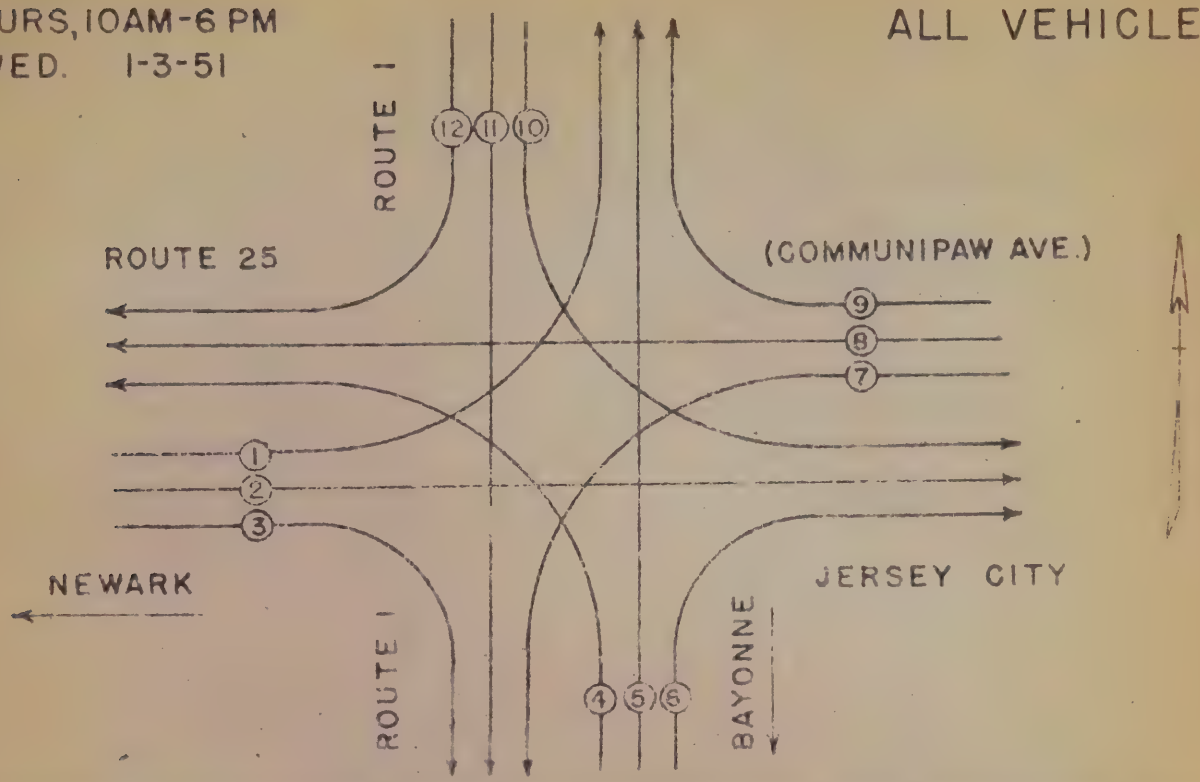
II-G

TABLE 3

INTERSECTION COUNT

8 HOURS, 10AM-6 PM
WED. 1-3-51

ALL VEHICLES



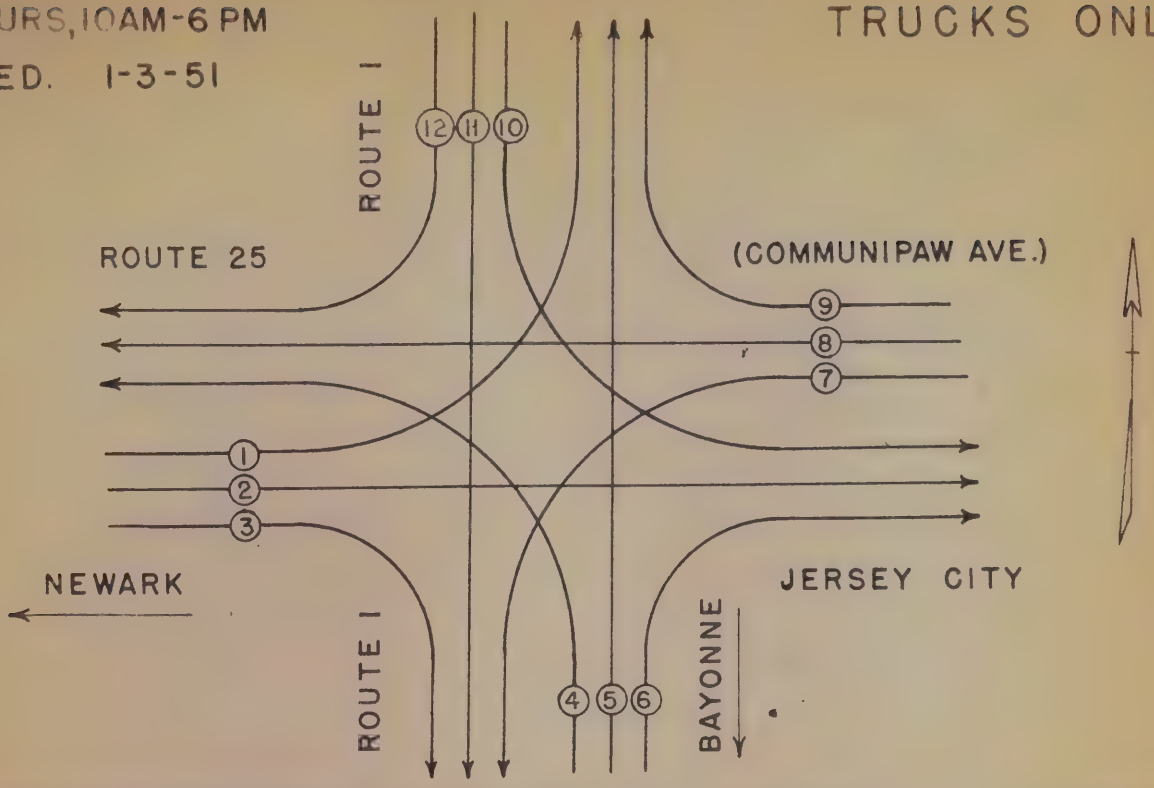
FROM	NEWARK				BAYONNE				JERSEY CITY				TONNELLE CIRCLE				
TO	TC	JC	B	TOT.	N	TC	JC	TOT	B	N	TC	TOT.	JC	B	N	TOT.	
	1	2	3		4	5	6		7	8	9		10	11	12		TOTALS
AM	537	295	215	1047	267	348	66	681	85	298	78	461	135	366	420	921	3110
	584	358	253	1195	299	286	67	652	59	347	52	458	127	352	491	970	3275
N	431	274	203	908	271	347	42	660	71	298	89	458	99	342	345	786	2812
	459	200	191	850	268	294	35	597	54	326	84	464	108	344	404	856	2767
P	541	253	244	1038	494	302	36	832	27	435	75	537	76	457	534	1067	3474
P	444	599	735	1778	393	301	36	730	54	421	79	554	112	508	436	1056	4118
P	614	721	774	2109	564	402	82	1048	82	487	111	680	72	499	468	1039	4876
P	430	474	415	1319	608	264	86	958	66	459	56	581	85	412	484	981	3839
TOTAL	4040	3174	3030	10,244	3164	2544	450	6158	498	3071	624	4193	814	3280	3582	7676	28 271

INTERSECTION COUNT

8 HOURS, 10AM-6 PM

WED. 1-3-51

TRUCKS ONLY



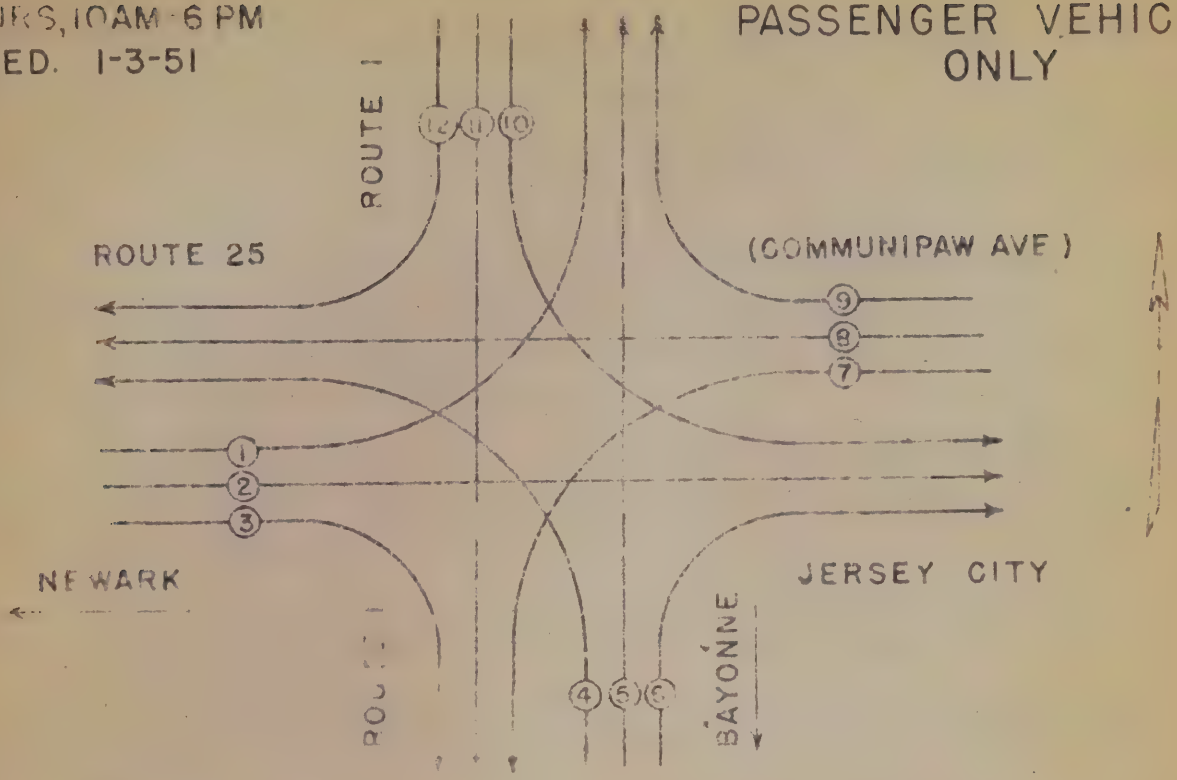
FROM	NEWARK				BAYONNE				JERSEY CITY				TONNELLE CIRCLE				
TO	TC	JC	B	TOT.	N	TC	JC	TOT.	B	N	TC	TOT.	JC	B	N	TOT.	
	1	2	3		4	5	6		7	8	9		10	11	12		TOTALS
10AM 11A	460	191	101	752	155	97	27	279	32	121	47	200	53	139	341	533	1764
11A 12N	501	229	119	849	175	113	13	301	21	150	28	199	57	148	402	607	1956
12N 1PM	381	174	104	659	157	131	11	299	24	129	41	194	48	146	278	472	1624
1 P 2 P	363	126	111	600	133	101	10	244	17	124	36	177	41	136	290	467	1488
2 P 3 P	462	159	127	748	155	88	15	258	6	221	31	258	32	121	442	595	1859
3 P 4 P	376	114	152	642	148	79	9	236	11	194	27	232	58	148	350	556	1666
4 P 5 P	513	116	123	752	210	75	21	306	21	246	29	296	39	159	401	599	1953
5 P 6PM	356	100	100	556	209	51	19	279	16	198	17	231	44	111	422	577	1643
TOTAL	3412	1209	937	5558	1342	735	125	2202	148	1383	256	1787	372	1108	2926	4406	13 953

TABLE 5

INTERSECTION COUNT

8 HOURS, 10AM-6 PM
WED. 1-3-51

PASSENGER VEHICLES ONLY



FROM	NEWARK				BAYONNE				JERSEY CITY				TONNELLE CIRCLE				
TO	TO JC		B	TOT	N	TO	JC	TO	B		TO		JC	B	N	TOT	
	1	2	3		4	5			7	8			10	11	12		TOTALS
AM	77	104	114	295	112	251	9	402	53	77	31	161	82	227	79	388	1346
	83	129	134	346	124	173	54	351	38	97	24	259	70	204	89	363	1319
N	50	100	99	249	114	216	31	361	47	169	48	264	51	196	67	314	1188
N	96	74	80	250	135	193	25	353	37	202	48	287	67	208	114	389	1279
PM	79	94	117	290	339	214	21	574	21	214	44	279	44	336	92	472	1615
P	68	485	583	1136	245	222	27	494	43	227	52	322	54	360	86	500	2452
P	101	605	651	1357	354	327	61	742	61	241	82	384	33	340	67	440	2923
P	74	374	315	763	399	213	67	679	50	261	39	350	41	301	62	404	2196
PM	628	1965	2093	4686	1822	1809	325	3956	350	1688	368	2406	442	2172	656	3270	14 318
TOTAL																	

TRAFFIC CONTROL

ROUTE 1 AND COMMUNIPAW AVENUE

JERSEY CITY HUDSON CO.

Thursday, Nov. 2, 1950

The following comments on different methods of traffic control at the intersection of Route 1 and Communipaw Avenue, Jersey City, are based on the behavior of traffic observed at this intersection. Factual data collected during various periods of observation at this intersection may or may not substantiate these comments.

The behvaior of traffic at this intersection was observed during daylight hours including the morning and late afternoon peak hours of traffic volumes at this location. These observations included several days in each of the following instances:

(1) When all traffic movements at this intersection were under no control beyond that imposed by the design of the intersection.

(2) When left turning vehicles and straight through moving vehicles were controlled at separate points of the intersection by traffic actuated traffic signals.

(3) When left turning vehicles and straight through moving vehicles were controlled at separate points of the intersection by traffic signals operating on fixed cycle.

A comparison of observations made during these above outlined methods of traffic control at this intersection present the following advantages and disadvantages for each method:

(1) When all traffic movements at this intersection were under no control beyond that imposed by the design of the intersection.

Observations made during a period immediately following the redesign of this intersection indicated a vast improvement in traffic conditions at this location. The constant congestion of vehicles heretofore observed at this intersection was vastly reduced or in some instances eliminated entirely. The average time loss for all vehicles using this intersection was considerably less than that experienced previous to redesign. Conflicting movements of traffic were completed without any control and while the elapsed time required to complete any and all movements, with no control instituted, may have been less than that required later with separate types of traffic light control, the lack of control resulted in some apparent accident potential at meeting points for conflicting movements of traffic. It is unlikely that the volumes of traffic completing the several conflicting movements at this intersection could avoid a high accident rate without some sort of control at the meeting point of each of these conflicting movements.

(2) When left turning vehicles and straight through moving vehicles were controlled at separate points of the intersection by traffic actuated traffic signals.

This method of traffic control afforded a measure of safety in the completion of conflicting traffic movements at this intersection, and did not unduly extend the average elapsed time required for the completion of these conflicting movements at this intersection. There was no great apparent congestion of vehicles waiting at an individual traffic light under normal conditions at this intersection.

(3) When left turning vehicles and straight through moving vehicles were controlled at separate points of the intersection by traffic signals operating on a fixed cycle.

From a standpoint of safety this method of traffic control affords conflicting movements of traffic a measure equal to that afforded by traffic actuated traffic signals. From a standpoint of average elapsed time required for the completion of these conflicting movements this method suffers in a comparison with traffic actuated control. There appears to be a greater number of vehicles on the average at all times halted at the separate traffic lights under normal conditions with this method of control. Abnormal congestion of vehicles caused by a Hackensack River Drawbridge opening appears to clear more rapidly at this intersection with traffic actuated control than with fixed time control. The offset timing of 16 seconds between separate traffic lights controlling left turning vehicles and the offset timing of 15 seconds between separate traffic lights controlling straight through moving vehicles on Communipaw Avenue appears to be extended beyond the needs for vehicles in these movements. Vehicles leaving the first traffic signal at or near the start of the Green Light Interval are invariably forced to halt at the second traffic signal and wait varying lapses of time for the start of the Green Light Interval at the second traffic signal. In the majority of cases this waiting time encountered at the second traffic signal is greater than that that would be encountered in the normal operation of traffic actuated signals at this intersection.

Summarizing the observed behavior of traffic at this intersection with no control traffic actuated control and fixed time control it is apparent that traffic actuated control is desirable. This method of traffic control affords traffic using this intersection an adequate measure of safety and maintains time losses at a minimum consistent with the safety needs for conflicting movements of traffic at this intersection.

T. J. Downs

Sketch of Intersection attached with various traffic signal timings indicated.

P.T.E.-36

Intersection of Communipaw
Avenue and Route 1,
Jersey City, Hudson County.

RBE:rdc

September 22, 1949

Memorandum to Mr. W. R. Bellis:

Introduction: On Monday, September 19, 1949, an observation was made of the flow of traffic through the intersection of Route 1 and Communipaw Avenue, Jersey City, Hudson County. This observation extended over a major portion of the daylight hours from 7 AM to 6:15 PM. There was a light rain until 8 AM. At that time it started to clear up and by 10 AM the weather became sunny and clear and remained that way for the balance of the day.

The intersection consists of two lanes northbound plus one lane for a right turn; two lanes eastbound plus one lane for a right turn; two lanes southbound, one of which is used for a right turn; two lanes westbound plus one lane for a right turn plus one lane for left turns which is generally used for through traffic.

There are two traffic lights suspended above the intersection. These lights were installed by Hudson County and are maintained and operated by County forces. During peak hours (7 to 9:15 AM and 4 to 6:30 PM) the lights are not operated and the traffic is directed by one or two county policemen. Between the peak hours the traffic signals are operated by a police officer from a booth on the southeast corner of the intersection. The signals are operated automatically only if the police officer is required to leave his post. On the day of observation the traffic signal was operated automatically for only fifteen minutes during the period from 7 AM to 6:30 PM.

There is a gas station on each of the four corners of the intersection but the vehicles entering and leaving those stations do not interfere with the flow of traffic since the drivers normally wait until the lane which they are entering is clear and has a green light.

There was construction on the southwest corner which completely blocked the right turn for eastbound traffic and during the morning peak hours blocked a second lane for the eastbound traffic approaching the intersection. Therefore, there was only one lane open for eastbound traffic west of the intersection during the morning peak hours. This is an abnormal condition and must be taken into account in this report.

The capacity of this intersection is high but the high volumes on all roads leading to the intersection cause the intersection to be above capacity for the major portion of the daylight hours.

The police officers on duty at this location handle the traffic very efficiently and are subjected to extreme hazards when the lights are not operating for they stand in an unprotected portion of the intersection in order to direct traffic.

Observations: At 7 AM the traffic was very heavy in all directions. The eastbound traffic was backed up to the Hackensack River Bridge and was predominantly truck traffic. Upon reaching the intersection approximately half of the eastbound traffic made a left turn to the north while the balance continued east. The right turn was very light at this time. The northbound traffic backed up 0.2 miles at times. The westbound traffic backed up to Lincoln Park but cleared up with one cycle interval. The southbound traffic backed up 0.1 miles.

By 8 AM traffic was backed up out of sight in all directions except the westbound. The police officer, in an attempt to clear up one direction, would allow that traffic to flow through the intersection for a long period of time (ie. 3 to 4 minutes). While this was going on the other three approaches to the intersection would back up quickly. The westbound traffic was the only traffic that could get through the intersection without waiting for more than one cycle. The north and southbound traffic is forced to wait for two or more cycles to get through the intersection. The eastbound traffic is jammed up seriously and is backed up beyond the Hackensack River Bridge as far as the Western Electric Plant. The northbound traffic that makes a left turn to the west is backed up for 0.2 miles constantly. Most traffic is flowing north and west from the intersection.

By 9 AM there was no relief at the intersection. All traffic was backed up out of sight except for the westbound. The southbound traffic was backed up through the Duncan Avenue light. The traffic at the Duncan Avenue light could get a green light and still be unable to move south because of the backup from Communipaw Avenue.

At 9:20 AM there was a noticeable decrease in the volume of traffic in all directions except eastbound which was still backed up through the Hackensack River Bridge.

By 10 AM only thirty to forty cars were backing up northbound, southbound and westbound and these cars would get through at the next green light. The police officer was favoring the eastbound traffic in a futile attempt to clear that traffic up.

From 10 AM till 2:30 PM the conditions mentioned in the previous paragraph were common. By 2:45 PM the eastbound traffic was cleared up by one long cycle of the light. This was the only period during the whole day when the eastbound traffic was not backed up through the Hackensack River Bridge. This period of fairly moderate traffic lasted for only forty-five minutes.

From 3 PM to 3:15 PM the traffic became much heavier eastbound, northbound and southbound. The northbound backed up 0.2 miles; the southbound backed up 0.15 miles; and the eastbound was backed up again out of sight. The westbound traffic was very light. At 4 PM the southbound traffic was backed up to Duncan Avenue.

At 4:15 PM two policemen plus a Captain were attempting to clear up the traffic. From 4:15 PM to 6:00 PM traffic was backed up out of sight in all directions except the westbound. About 5:30 PM the westbound backed up to Lincoln Park but cleared up after fifteen minutes.

Discussion: Right turns are allowed at all times. However, quite frequently, a car that wishes to go through the intersection blocks up the right turn lane in spite of this turn being well posted for a good distance from the intersection. Whenever this occurs the right turn lane will back up quite rapidly.

When the intersection is controlled by lights there is great friction between the southbound traffic and the heavy left turn of the northbound traffic. The timid driver relinquishes the right of way and either the southbound traffic will not move during the green cycle or there will be no left turn northbound.

When the left turn northbound wins out it keeps making the left turn through a few seconds of the red signal. The eastbound traffic is, therefore, very slow in starting up when it receives the green signal.

This situation does not occur when the traffic officers are directing traffic without use of the traffic signals. They first let the southbound traffic through and then allow the northbound left turn to proceed without interference.

For the short interval during which the traffic signal was operated automatically there were only five or six eastbound trucks that were able to negotiate the left hand turn to the west. This lefthand turn is characteristically very slow due to the high percentage of truck traffic.

The intersection as it stands is being controlled very efficiently by the police officers on duty. However, with the present arrangement leading to and at the intersection the volumes are entirely too high to allow smooth and free-flowing traffic.

There is only a short period of the day when it could be said that the intersection was efficient and even at that time the eastbound traffic is tied up to a degree which is not favorable.

This report is strictly an observation of daylight hours and does not show conditions at night. The prevalent eastbound tieup was aggravated to a great extent by the construction as mentioned on page 2. However, the eastbound tieup is a common occurrence, even if not as severe as on the day of observation.

Respectfully submitted,

Roy B. Evensen
Junior Highway Engineer

P.T.E.-35

Route 1 & Communipaw Avenue
RJN:rdc

September 16, 1949

Memorandum to Mr. W. R. Bellis:

Investigation of the intersection of Route 1 and Communipaw Avenue, Jersey City, on Friday, September 16, 1949, disclosed the following conditions:

The first stages of revising the intersection were in progress, the contractor excavating for and laying a conduit along the south side of Route 25 for a distance of 500-600 feet. This work was hampering traffic, forcing traffic that wanted to right-turn to Bayonne to use the lane normally used for straight-through movements for all but the last 75 feet or so. This work also kept disabled vehicles from utilizing the shoulders, reducing Route 25 to one lane whenever a breakdown occurred.

At 10:30 in the morning it took approximately 12 minutes to get from the Hackensack River bridge through the intersection.

The intersection was under observation from 3:01 PM till 5:45 PM. From 3:15 PM until 5:45 PM there was a continuous double line of traffic on Route 25 extending from the intersection back to the Hackensack River Bridge, a distance of .7 of a mile. At 5:45 PM the line was continuous back to Central Avenue, a distance of about 1 mile. This later condition may have existed at other times between 3:00 P.M. - 5:45PM but the Hackensack Bridge was the limit of my vision while at the intersection.

Except for bridge openings, this stream of traffic on Route 25 was never cleaned out.

None of the other streams of traffic approaching the intersection were as badly jammed up as was the above. On both legs of Route 1, traffic was dense but was moving freely. However, Route 1 towards Bayonne had, at times, a line extending back 500 or so feet, but which was quickly cleared out when the left turn was permitted them.

At about 4:30 PM two local policemen took manual control of the intersection shutting off the traffic signals. They operated the intersection in four major phases:

Phase I - Left turn from Route 25 to Route 1
Phase II - Straight through on Route 1
Phase III - Left turn from Route 1 (Bayonne) to Route 25
Phase IV - Straight, from Communipaw to Rt. 25.

All right turns were made whenever they did not conflict with the major phases; the minor left turns were fitted in whenever a gap appeared in a major left turn.

Over a 45 minute period, the various phases were assigned the following % of time.

Phase I - 30%
Phase II - 35%
Phase III - 20%
Phase IV - 15%

This handling of the intersection cleared out three of the four legs every few minutes; the Route 25 leg was never cleared out.

From about 5:15 PM to 5:45 PM three trucks were clocked from the Hackensack River Bridge until they had cleared the intersection. The time was 6, 9 and 9 minutes to go the .7 mile, or an average speed of about 5 miles per hour.

Robert J. Nolan
Assistant Highway Analyst

ROUTES 1 & 25 (COMMUNIPAW AVENUE)
JERSEY CITY, HUDSON COUNTY

Comparison of the average times required, in minutes, for vehicles to make all movements before re-construction, after construction with no control, after construction with 1022 traffic lights and after construction with fixed traffic lights. All distances were adjusted to conform to the 1022 traffic lights.

Trucks

From Newark	Av. Time Before Const.	Av. Time After Const. No Control	Av. Time After Const. 1022 Time	Av. Time After Const. Fixed Time
R.T.	.553	.202	.357	.336
S.T.	1.650	.532	.713	.630
L.T.	1.602	.688	1.12[illegible]	.713
From Bayonne				
R.T.	.406	.378	.402	.570
S.T.	1.119	.495	.622	.675
L.T.	1.581	.654	.797	.730
From Communipaw Ave.				
R.T.	.551	.454	.563	.734
S.T.	1.580	.535	.819	.674
L.T.	1.355	.568	.759	.827
From Tonnele Circle				
R.T.	.604	.406	.378	.388
S.T.	1.200	.511	.783	.890
L.T.	1.172	.540	.772	.749

Passenger Cars

From Newark				
R.T.	.496	.170	.304	.302
S.T.	1.231	.483	.660	.563
L.T.	1.277	.560	.925	.626
From Bayonne				
R.T.	.414	.356	.356	.454
S.T.	.847	.408	.556	.542
L.T.	1.279	.589	.546	.661
From Communipaw Ave.				
R.T.	.424	.402	.488	.623
S.T.	1.166	.497	.740	.597
L.T.	1.178	.583	.772	.830
From Tonnele Circle				
R.T.	.575	.382	.347	.328
S.T.	.973	.433	.727	.667
L.T.	.920	.458	.700	.643

ROUTES 1 & 25 (COMMUNIPAW AVENUE)
JERSEY CITY, HUDSON COUNTY

Comparison of the average times required, in minutes, for vehicles to make all movements before reconstruction, after construction with no control, after construction with 1022 traffic lights and after construction with fixed traffic lights. All distances were adjusted to conform to the 1022 traffic lights.

Trucks

	Av. Time Before Const.	Av. Time After Const. No Control	Av. Time After Const. 1022 Op.	Av. Time After Const. Fixed Time
From Newark				
R.T.	.551	.295	.357	.336
S.T.	1.650	.532	.733	.630
L.T.	1.602	.693	1.102	.713
From Bayonne				
R.T.	.406	.378	.402	.570
S.T.	1.119	.491	.625	.675
L.T.	1.581	.654	.820	.730
From Communipaw Ave.				
R.T.	.546	.449	.563	.744
S.T.	1.575	.530	.813	.674
L.T.	1.355	.568	.759	.827
From Tonnele Circle				
R.T.	.607	.381	.395	.388
S.T.	1.196	.507	.825	.890
L.T.	1.168	.536	.772	.761

Passenger Cars

From Newark				
R.T.	.495	.262	.304	.302
S.T.	1.231	.483	.655	.563
L.T.	1.277	.554	.945	.626
From Bayonne				
R.T.	.414	.356	.356	.443
S.T.	.847	.404	.558	.542
L.T.	1.279	.589	.739	.660
From Communipaw Ave.				
R.T.	.420	.398	.505	.623
S.T.	1.161	.492	.743	.597
L.T.	1.172	.583	.769	.830
From Tonnele Circle				
R.T.	.577	.357	.347	.328
S.T.	.970	.429	.727	.667
L.T.	.917	.455	.700	.649

Jr. Size	Jr. Wt.	Jr. Time	Jr. Time
Jersey Young	Adult Two Yr.	After Check	Adult Female
	In Per Yard	Head Up	Lived Three
Farm Morning			
Farm Community Two			
Farm Domestic Dress			
Green Dress			
Farm Morning Two			

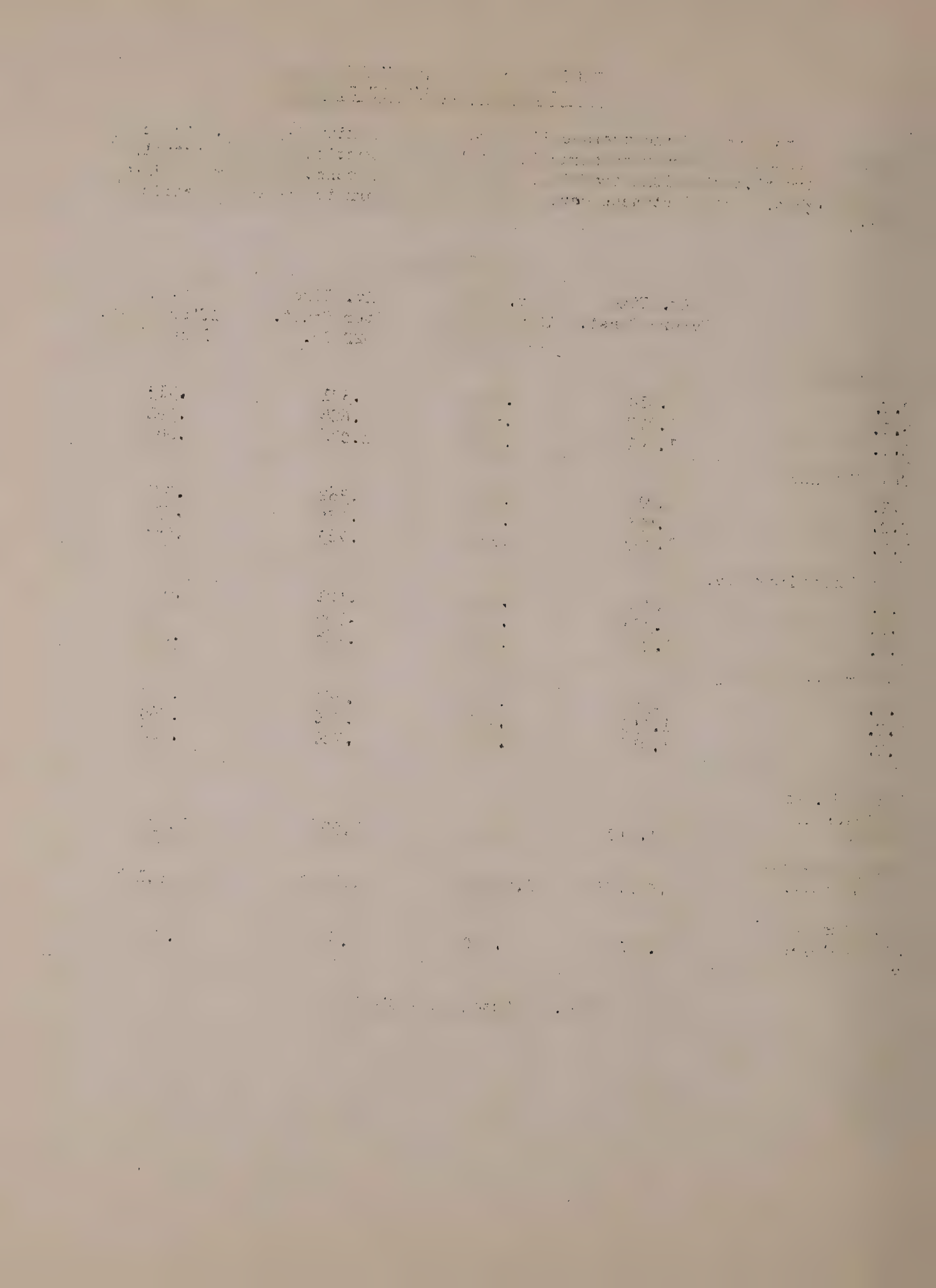
ROUTES 1 & 25 (COMMUNIPAW AVENUE
JERSEY CITY, HUDSON COUNTY

Comparison of the average times required, in minutes, for vehicles to make all movements before reconstruction, after construction with no control, after construction with 1022 traffic lights, and after construction with fixed traffic lights. All distances were adjusted to conform to the 1022 traffic lights.

All Vehicles

	Av. Time Before Const.	Av. Time After Const. No Control	Av. Time After Const. 1022 Op.	Av. Time After Const. Fixed Time
From Newark				
R.T.	.514	.270	.321	.313
S.T.	1.378	.509	.684	.592
L.T.	1.501	.659	1.046	.685
From Bayonne				
R.T.	.413	.360	.362	.471
S.T.	.935	.431	.575	.595
L.T.	1.399	.604	.763	.686
From Communipaw Ave.				
R.T.	.466	.413	.521	.671
S.T.	1.333	.505	.769	.634
L.T.	1.234	.578	.768	.829
From Tonnele Circle				
R.T.	.596	.378	.385	.374
S.T.	1.059	.449	.756	.760
L.T.	1.016	.482	.720	.686
Total No. of Vehicles in Sample	1,612	3,528	4,996	4,332
Total Time for all Vehicles	1,598,539	1,623,838	3,170,013	2,508,134
Av. Time for all Vehicles	.992	.460	.635	.579

14,557 Total Cars Clocked



ROUTES 1 & 25 (COMMUNIPAW AVENUE)
JERSEY CITY, HUDSON COUNTY

Comparison of the average times at the peak hour of the day, 5 P. M. to 6 P. M., required in minutes for vehicles to make all movements before reconstruction after construction with no control, after construction with 1022 traffic lights, and after construction with fixed traffic lights.

Trucks

	Av. Time Before Const.	Av. Time After Const. No Control	Av. Time After Const. 1022 Op.	Av. Time After Const. Fixed Time
From Newark				
R.T.	.625	.314	.375	.328
S.T.	2.081	.613	.992	.618
L.T.	2.586	.710	1.222	.703
From Bayonne				
R.T.	.399	0	.398	.631
S.T.	1.319	.406	.681	.647
L.T.	1.592	.672	.865	.743
From Communipaw Ave.				
R.T.	.493	.429	.502	.939
S.T.	1.083	.590	.942	.627
L.T.	1.731	.474	0	.977
From Tonnele Circle				
R.T.	.658	.379	.383	.372
S.T.	1.308	.551	.911	.792
L.T.	1.177	.505	.780	.754

Passenger Cars

From Newark				
R.T.	.506	.267	.312	.323
S.T.	1.277	.483	.761	.559
L.T.	1.525	.550	.923	.531
From Bayonne				
R.T.	.442	.366	.369	.495
S.T.	1.105	.400	.533	.567
L.T.	1.251	.583	.762	.660
From Communipaw Ave.				
R.T.	.418	.370	.460	.709
S.T.	1.169	.393	.706	.649
L.T.	1.085	.557	.712	.808
From Tonnele Circle				
R.T.	.600	.375	.339	.319
S.T.	.894	.423	.724	.657
L.T.	1.029	.487	.697	.652

ROUTES 1 & 25 (COMMUNIPAW AVENUE)
JERSEY CITY, HUDSON COUNTY

Comparison of the average times at the peak hour of the day, 5 P. M. to 6 P. M., required in minutes for vehicles to make all movements before reconstruction, after construction with no control, after construction with 1022 traffic lights, and after construction with fixed traffic lights.

All Vehicles

	Av. Time Before Const.	Av. Time After Const. No Control	Av. Time After Const. 1022 Op.	Av. Time After Const. Fixed Time
From Newark				
R.T.	.540	.274	.325	.324
S.T.	1.491	.510	.830	.583
L.T.	2.200	.668	1.093	.627
From Bayonne				
R.T.	.430	.366	.371	.534
S.T.	1.197	.401	.559	.603
L.T.	1.397	.588	.782	.686
From Communipaw Ave.				
R.T.	.444	.379	.467	.758
S.T.	1.139	.434	.777	.640
L.T.	1.408	.536	.712	.871
From Tonnele Circle				
R.T.	.632	.379	.376	.362
S.T.	1.092	.440	.778	.716
L.T.	1.086	.493	.713	.676
Total No. of Vehicles in Sample	188	340	.505	.265
Total Time for all Vehicles	199.034	150.755	320.709	147.640
Average Time for all Vehicles	1.059	.443	.635	.557

ROUTES 1 & 25 (COMMUNIPAW AVENUE)
JERSEY CITY, HUDSON COUNTY

Total elapsed time for all vehicles to travel through the above intersection on an average day with 45,000 vehicles entering the intersection.

	Before Const.	After Construction		
		No Control	1022 Operation	Fixed Time
From Newark				
R.T.	2595.7	1363.5	1621.1	1580.7
S.T.	7096.7	2621.4	3522.6	3048.8
L.T.	7204.8	3163.2	5020.8	3288.0
Total	16897.2	7148.1	10164.5	7917.5
From Bayonne				
R.T.	363.4	316.8	318.6	414.5
S.T.	5189.3	2392.1	3191.3	3302.3
L.T.	7065.0	3050.2	3853.2	3464.3
Total	12617.7	5759.1	7363.1	7181.1
From Communipaw Ave.				
R.T.	512.6	454.3	573.1	738.1
S.T.	6865.0	2600.8	3960.4	3265.1
L.T.	1085.9	508.6	675.8	729.5
Total	8463.5	3563.7	5209.3	4732.7
From Tonnele Circle				
R.T.	2860.8	1814.4	1848.0	1795.2
S.T.	5877.5	2492.0	4195.8	4218.0
L.T.	1117.6	530.2	792.0	754.6
Total	9855.9	4836.6	6835.8	6767.8
Grand Total Minutes	47834.3	21307.5	29572.7	26599.1
Vehicle Hours for Average Day	7972.4	3551.3	4928.8	4433.2
Average Minutes per Vehicle	1,062	.473	.656	.590

ROUTES 1 & 25 (COMMUNIPAW AVENUE)
JERSEY CITY, HUDSON COUNTY

Total elapsed time for all vehicles to travel through the above intersection on an average day with 64,650 vehicles entering the intersection.

(Time in Minutes)

	Before Const.	After Const. No Control	After Const. 1022 Op.	After Const. Fixed Time
From Newark				
R.T.	3586.2	1883.8	2239.6	2183.8
S.T.	10357.0	3825.6	5140.9	4449.5
L.T.	12887.6	5658.2	8981.0	5881.4
Totals	26830.8	11367.6	16361.5	12541.7
From Bayonne				
R.T.	440.7	384.1	386.3	502.6
S.T.	6133.6	2827.4	3772.0	3903.2
L.T.	9760.8	4214.1	5323.5	4786.2
Totals	16335.1	7425.6	9481.8	9192.0
From Communipaw Ave.				
R.T.	754.4	668.6	843.5	1086.3
S.T.	10018.8	3795.6	5779.8	4765.1
L.T.	1316.7	616.7	819.5	884.5
Totals	12089.9	5080.9	7442.8	6735.9
From Tonnele Circle				
R.T.	5117.3	3245.5	3305.6	3211.2
S.T.	6947.0	2945.4	4959.4	4985.6
L.T.	1644.9	780.4	1165.7	1110.6
Totals	13709.2	6971.3	9430.7	9307.4
Grand Total Time	68965.0	30845.4	42716.8	37750.0
Vehicle Hours Per Av. Day	1149.4	514.1	711.9	629.2
Av. Minutes Per Vehicle	1.067	.477	.661	.584

NJDOT RESEARCH LIBRARY
3 4310 00004 9281